

TECHNICAL SCHEDULES A AND B FOR
STAYS AND ASSOCIATED COMPONENTS

Schedule A: Keetmanshoop Electricity Business Unit (KEBU) specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause	Description		Schedule A	Schedule B
		Manufacturing standard		NRS 022	xxxxxxxxxx
		Stay wires			xxxxxxxxxx
		- Number of strands and diameter	m		xxxxxxxxxx
		- Length of stay wire required			xxxxxxxxxx
		Stay anchor assemblies			
		- 12 mm diameter	quantity		xxxxxxxxxx
		- 20 mm diameter	quantity		xxxxxxxxxx
		Test reports and details to be supplied		Yes	
		Thimbles	quantity		xxxxxxxxxx
		Stay insulators			
		- Type (porcelain/glass fibre)	kN	porcelain	xxxxxxxxxx
		- Breaking load	quantity		xxxxxxxxxx
		- Breaking load of stay insulator offered	kN	xxxxxxxxxx	xxxxxxxxxx
		Test reports and details to be supplied		Yes	
		Pole-top make-offs			
		a) Formed pole wrap fittings	quantity		xxxxxxxxxx
		b) Stay brackets	quantity		xxxxxxxxxx
		c) Formed guy grips	quantity		xxxxxxxxxx
		d) Wire rope clamps (Crosby clamps)	quantity		xxxxxxxxxx
		Stay bracket maximum design load	kN	xxxxxxxxxx	
		Guy grip dead-end fittings:			
		Test reports and details to be supplied		Yes	
		Stay guards	quantity		xxxxxxxxxx
		Type of stay guards (slip-on/clip-on)		Clip-on	xxxxxxxxxx
		Are wooden drums to be resistant to biological attack?	Yes/No		xxxxxxxxxx
		Is corrosion protection required?	Yes/No		xxxxxxxxxx
		Other packaging requirements?			xxxxxxxxxx
		Method of packing for offered accessories other than stay wires		xxxxxxxxxx	
		Guy grip dead-end fittings: Method of identification		xxxxxxxxxx	
		Stay insulators			
		a) Manufacturer's identification		xxxxxxxxxx	
		b) Type designation		xxxxxxxxxx	
		c) Minimum breaking load	kN	xxxxxxxxxx	
		d) Year of manufacture or batch identification		xxxxxxxxxx	
		Any special packing requirements?			xxxxxxxxxx
		Methods of marking and identification		xxxxxxxxxx	

TECHNICAL SCHEDULES A AND B FOR
LONG ROD INSULATORS

Schedule A: Keetmanshoop Electricity Business Unit (KEBU) specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause	Description		Schedule A	Schedule B
		Quantity of insulators required	quantity		xxxxxxxxxx
		Specification to which insulators comply		NRS 066	
		Name of manufacturer		xxxxxxxxxx	
		Manufacturer's identification reference		xxxxxxxxxx	
		Insulator rated voltage	kV	36	
		Insulation material required		Silicone rubber	xxxxxxxxxx
		Minimum specific creepage distance	mm/kV	31	
		Tongue - live end fitting IEC 60471 16L or Ball - live end fitting IEC 60120 16B			
		Clevis - earth end fitting IEC 60471 16L or Socket - earth end fitting IEC 60120 16B			
		Specified mechanical load (SML) 40, 70 or or mechanical failing load (MFL) 120 kN			
		Connecting length	mm		
		Type of split pin material offered/required		stainless steel 304 or 316	
		Material used for end fittings		xxxxxxxxxx	

TECHNICAL SCHEDULES A AND B FOR
POST INSULATORS

Schedule A: Keetmanshoop Electricity Business Unit (KEBU) specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause	Description		Schedule A	Schedule B
		Quantity of insulators required	quantity		xxxxxxxxxx
		Specification to which insulators comply		NRS 066	
		Name of manufacturer		xxxxxxxxxx	
		Manufacturer's identification reference		xxxxxxxxxx	
		Insulator rated voltage	kV	36	
		Insulation material required		Silicone rubber	xxxxxxxxxx
		Minimum specific creepage distance	mm/kV	31	
		Live end fitting (Tie-top)		F-Neck	xxxxxxxxxx
		Base fitting		M20 insert or cap	xxxxxxxxxx
		Mechanical failing load (4 or 10)	kN		
		Insulator length	mm	xxxxxxxxxx	
		Grade/type of stainless steel material		xxxxxxxxxx	

TECHNICAL SCHEDULES A AND B FOR
ACSR CONDUCTOR

Schedule A: Keetmanshoop Electricity Business Unit (KEBU) specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause	Description		Schedule A	Schedule B
		Conductor manufacturing standard		IEC 61089	xxxxxxxxxx
		Code Name (e.g Gopher, Rabbit, Hare)		Hare,Rabbit,Gopher	
		Quantity	m		
		Strand configuration	Al/Steel		
		Wire/strand diameter	mm		
		Diameter of steel wires	mm		
		Overall diameter	mm		
		Aluminium cross-sectional area	mm ²		
		Steel cross-sectional area	mm ²		
		Total conductor cross-sectional area	mm ²		
		Mass of aluminium wires	kg/km		
		Mass of steel wires	kg/km		
		Total conductor mass	kg/km		
		Ultimate tensile strength	kN		
		DC resistance at 20 °C	Ω/km		
		Current rating	A		
		Standard drum length	m	1500	
		Conductor tested as per IEC 61089 or SANS 182-3	Yes/No	Yes	
		Gross mass of cable drum	kg		
		Conductor identification and marking as per IEC 61089	Yes/No		
		Type test certificates required	Yes/No	Yes	
		Grease	Yes/No		
		- Grease trade name			
		- Name of manufacturer			
		- Product classification			
		- Number of layers greased		Type I/Type II IEC 61089 Annex C Case 4	

TECHNICAL SCHEDULES A AND B FOR
WOODEN POLES

Schedule A: Keetmanshoop Electricity Business Unit (KEBU) specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause	Description		Schedule A	Schedule B
		Specie of pole (Pine, Eucalyptus)			xxxxxxxxxx
		Strength class	MPa	55	
		Specification to which poles comply		SANS 753/SANS 754	xxxxxxxxxx
		Name of manufacturer		xxxxxxxxxx	
		Manufacturer's identification reference		xxxxxxxxxx	
		Quantity of poles required	quantity		xxxxxxxxxx
		Moisture content at impregnation	g/kg	250	
		Impregnation (indicate process & standard)			
		Preservative (type & standard)		Type 2, 3 & 4 creosote to SANS 616	
		Length of pole	m	8,11,13	
		Minimum top diameter	mm	160-200	
		Poles securely bound at both ends?		Yes	
		Marking in accordance with requirements of this specification? (indicate parameters to be marked, method of marking & position of marking)		Yes	

TECHNICAL SCHEDULES A AND B FOR
LOW VOLTAGE AERIAL BUNDLE CONDUCTOR

Schedule A: Keetmanshoop Electricity Business Unit (KEBU) specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause	Description		Schedule A	Schedule B
		ABC manufacturing standard		SANS 1418	xxxxxxxxxx
		Rated voltage	V	600/1000	
		Type of dielectric		XLPE	xxxxxxxxxx
		Current rating in air	A		
		Short-circuit rating (1 sec)	kA		
		Dielectric resistance at 20 °C	MΩ.km		xxxxxxxxxx
		Conductor identification and marking required	Yes/No	Yes	
		Phase conductor size	mm ²	95,70, 35	
		Material of phase conductor		Aluminium	
		Minimum number of wires/strands			
		Maximum resistance at 20 °C	Ω/km		
		Minimum breaking force	N		
		Auxiliary conductor size	mm ²	25	
		Minimum number of wires/strands			
		Maximum resistance at 20 °C	Ω/km		
		Minimum breaking force	N		
		Neutral / earth supporting conductor size	mm ²	54.6	
		Minimum number of wires/strands			
		Maximum resistance at 20 °C	Ω/km		
		Minimum breaking force	N		
		Gross mass of cable drum	kg		
		Type test certificates required	Yes/No	Yes	
		Marking, labelling and packaging to SANS 1418	Yes/No	Yes	

TECHNICAL SCHEDULES A AND B FOR
LV ABC POLE MOUNTING HARDWARE

Schedule A: Keetmanshooop Electricity Business Unit (KEBU) specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause	Description		Schedule A	Schedule B
1		Quantities required for: - M16 pigtail bolt - M16 eye nut - 10 mm coach screw pigtail - Strain assembly - Suspension assembly		xxxxxxxxxx	xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx xxxxxxxxxx
2		M16 Pigtail bolt		xxxxxxxxxx	xxxxxxxxxx
		Manufacturing standard		NRS 018-2	
		Ferrous material used		xxxxxxxxxx	
		Length of thread of pigtail bolt	mm		
		ISO metric threads required	Yes/No	Yes	
3		M16 Eye nut			
		Manufacturing standard		NRS 018-2	
		Ferrous material used		xxxxxxxxxx	
		ISO metric threads required	Yes/No		
4		10 mm coach screw pigtail			
		Manufacturing standard		NRS 018-4	
		Material used		xxxxxxxxxx	
		Length of thread of pigtail			
5		Strain assembly			
		Material used for mounting bracket		Aluminium alloy	
		Type of UV stabilised material used for strain fitting		xxxxxxxxxx	
		Manufacturing standard		NRS 018-2	
		Cross-sectional area of supporting conductor	mm ²	54,6	
		Colour of fitting insulation material		Black	
		Designated range of strain fittings		xxxxxxxxxx	
6		Suspension assembly			
		Material used for mounting bracket		Aluminium alloy	
		Type of UV stabilised material used for suspension fitting		xxxxxxxxxx	
		Manufacturing standard		NRS 018-2	
		Cross-sectional area of supporting conductor	mm ²	54,6	
		Colour of fitting insulation material		Black	
		Designated range of strain fittings	mm ²		
7		Type test certificates required for:			
		- Mechanical withstand test	Yes/No	Yes	
		- Corrosion test	Yes/No	Yes	
8		Corrosion and damage protection method		xxxxxxxxxx	
9		Packing suitable for storage?	Yes/No	Yes	
10		Maximum gross mass of bulk packs	kg		
11		Details of installation instructions required?	Yes/No	Yes	

TECHNICAL SCHEDULES A AND B FOR
LV ABC IPCs

Schedule A: Keetmanshoop Electricity Business Unit (KEBU) specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause	Description		Schedule A	Schedule B
		IPC manufacturing standard		NRS 018-5	xxxxxxxxxx
		ABC manufacturing standard		SANS 1418	xxxxxxxxxx
		Service connection cable manufacturing standard		NRS 063	xxxxxxxxxx
		Types of IPCs		xxxxxxxxxx	xxxxxxxxxx
		a) Main / Service connection / Street lighting	Range	xxxxxxxxxx	
			quantity		
		Shear-heads required?	Yes/No		
		Design torque of shear-heads			
		IPCs to be weatherproof?			
		IPS supplied with end caps?			
		Samples and design details required?			
		Colour of IPCs		Black	
		Type test certificates required for:		xxxxxxxxxx	xxxxxxxxxx
		a) Shear-head torque test	Yes/No		
		b) Slip test	Yes/No		
		c) Waterproof test	Yes/No		
		d) Electrical aging test	Yes/No		
		e) Accelerated weathering test	Yes/No		
		f) Corrosion test	Yes/No		
		g) Fire retardation test	Yes/No		
		Visual inspection and dimensions	Yes/No		
		IPCs marked and packed as per NRS 018-5?	Yes/No	Yes	

TECHNICAL SCHEDULES A AND B FOR
LV ABC LUGS

Schedule A: Keetmanshoop Electricity Business Unit (KEBU) specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause	Description		Schedule A	Schedule B
		Lug manufacturing standard		NRS 018-5	xxxxxxxxxx
		Quantity of lugs - (specify size in mm ²)			
		Aluminium-copper bi-metallic lug required?	Yes/No	Yes	
		Expected service life	years		
		Samples and design details required?	Yes/No		
		Is lug insulated?	Yes/No	Yes	
		Insulation material		xxxxxxxxxx	
		Colour of insulating material			
		Is insulating material UV protected?			
		Die set size use on a range of 25-95 mm ²	mm		
		Type of electrical compound used		xxxxxxxxxx	
		Type test certificates required for:		xxxxxxxxxx	xxxxxxxxxx
		a) Waterproof test	Yes/No		
		b) Accelerated weathering test	Yes/No		
		c) Waterproof test	Yes/No		
		d) Fire retardation test	Yes/No		
		e) Electrical aging test	Yes/No		
		f) Corrosion test	Yes/No		
		g) Tensile test	Yes/No		
		Visual inspection and dimensions	Yes/No		
		Lugs marked and packed as per NRS 018-5?	Yes/No	Yes	

TECHNICAL SCHEDULES A AND B FOR
LV ABC JOINTS

Schedule A: Keetmanshoop Electricity Business Unit (KEBU) specific requirements
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause	Description		Schedule A	Schedule B
		Joint manufacturing standard		NRS 018-5	xxxxxxxxxx
		ABC manufacturing standard		SANS 1418	
		Minimum breaking force of conductor	kN		
		Quantity of joints - (specify size in mm ²)	quantity		
		Expected service life	years		
		Samples and design details required?	Yes/No		
		Is joint insulated?	Yes/No	Yes	
		Insulation material		xxxxxxxxxx	
		Colour of insulating material		Black	
		Is insulating material UV protected?	Yes/No	Yes	
		Solid barrier separating the barrel?	Yes/No		
		Die set size use on a range of 25-95 mm ²	mm		
		Type of electrical compound used		xxxxxxxxxx	
		Type test certificates required for:		xxxxxxxxxx	xxxxxxxxxx
		a) Waterproof test	Yes/No		
		b) Accelerated weathering test	Yes/No		
		c) Waterproof test	Yes/No		
		d) Fire retardation test	Yes/No		
		e) Electrical aging test	Yes/No		
		f) Corrosion test	Yes/No		
		g) Tensile test	Yes/No		
		h) Short-circuit test	Yes/No		
		Visual inspection and dimensions	Yes/No		
		Joints marked and packed as per NRS 018-5?	Yes/No	Yes	

TECHNICAL SCHEDULES A AND B
DEVIATION SCHEDULE

Any deviations offered to this specification shall be listed below with reasons for the deviation. In addition, evidence shall be provided that the proposed deviation will at least be more cost-effective than that specified by KEBU.

Item	Sub-clause	Proposed deviation