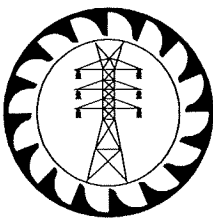


138-3: 2016

CEB
SPECIFICATION

**TOOLS FOR ERECTION OF AERIAL
BUNDLED CONDUCTOR AND
ACCESSORIES (33kV)**



**CEYLON ELECTRICITY BOARD
SRI LANKA**

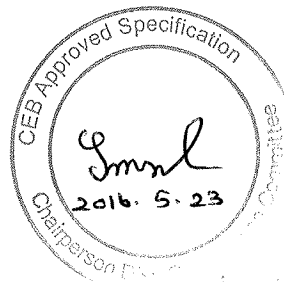


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CONTENTS

	Page
1.0 Scope	3
2.0 System Parameters	3
3.0 Service Conditions	3
4.0 Applicable Standards	3
5.0 Basic Features	3
6.0 Quality Assurance	4
7.0 Additional Requirements	4
8.0 Tests	5
9.0 Information to be furnished with the Offer	5
10.0 Annex	6
Annex A: Schedule of Guaranteed Technical Particulars	7
Annex B: Non-Compliance Schedule	8



TOOLS FOR ERECTION OF AERIAL BUNDLED CONDUCTOR AND ACCESSORIES (33kV)

1.0 SCOPE

This specification covers the design, manufacture and testing of Tools required for the erection of 19/33 (36) kV, U_0/U_m Aerial Bundled Conductor (ABC) System.

2.0 SYSTEM PARAMETERS

(a)	Nominal voltage	33 kV
(b)	System highest voltage	36 kV
(c)	System frequency	50 Hz
(d)	Method of earthing	Non Effectively Earthed
(e)	System fault level	13.1 kA
(f)	Fault duration	1 s

3.0 SERVICE CONDITIONS

(a)	Annual average ambient temperature	30 °C
(b)	Maximum ambient temperature	40 °C
(c)	Maximum relative humidity	90%
(d)	Environmental conditions	Humid tropical climate with heavily polluted atmosphere
(e)	Operational altitude	From M.S.L. to 1900 m above M.S.L.
(f)	Isokeraunic (Thunder days) level	100 days

4.0 APPLICABLE STANDARDS

The Tools supplied shall be suitable for use in installing Aerial Bundled Conductors (95x3 + 50mm² and 150x3 + 50mm²) and Accessories conforming to CEB Standard 138-1:2015 and 138- 2:2015.

5.0 BASIC FEATURES

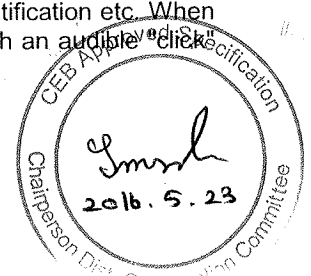
The Tools stated hereunder shall be compatible with the 95x3 + 50mm² and 150x3 + 50mm² aerial bundled conductors and accessories conforming to the CEB Standard 138-1:2015 and 138-2:2015 respectively.

5.1 Hand Operated Hydraulic Press with Dies

The hydraulic press shall be of hand-operated type with slim press head for use in confined areas and with adjustable ram stroke. It shall crimp fittings of Aerial Bundled Conductors up to 150mm². The press shall be supplied with fast and easy die changing and secure die positioning mechanism. It shall possess a high pressure safety valve to protect against overpressure. The tool head shall have 180 deg. rotation to make it easy to position for work.

The steel part shall be made of stainless steel or nickel plated steel. Dual die, supplied with the tool shall have appropriate across flat dimensions (A/F) or diameter which complies with the lug sizes which relevant for cable cross sections (50mm² messenger, 95mm² and 150mm² phase conductor).

The die should be clearly and indelibly marked with A/F dimension, supplier identification etc. When the compression is completed automatic pressure release shall be achieved with an audible click sound. The weight of the tool shall not be more than 6 kg.



5.2 Plastic Wedge Separator

The wedge separator will be used during stringing the ABC to separate the individual core of twisted cable where necessary.

These separators will be inserted in the twist of the cable so that one particular cable shall be separated. The wedge separator shall be made of good quality hard plastic. The dielectric strength of material used shall be 5 kV/mm for one minute. Both sides of the wedge shall have large grooves so that it can easily be inserted in the twisted cable. The top surface shall also have small grooves for the application of manual force.

5.3 Stringing Block for Aerial Bundled Conductor

Stringing Block shall be suitable for stringing Aerial Bundled Conductors of 95mm² phase conductor and 150mm² phase conductor with 50mm² messenger.

The internal diameter of the sheave and the dimensions of the groove shall be suitable to accommodate the aerial bundled conductors specified above. The sheave of the block shall be made of material which shall not cause deterioration of insulation of the bundled conductors.

Stringing blocks must be supplied with a hook attachment including a safety stopper. A suitable safety gate shall be provided to avoid the cable coming off the groove during stringing. The working load of the Stringing Block shall not be less than 8 kN.

5.4 Open Type Pulling Grip and Swivel

The Open Type Pulling Grip and Swivel shall be suitable for stringing the aerial bundled conductor specified. Each set of pulling grips shall include:

- i) One number Pulling Grip for the twisted bundle made of polypropylene (synthetic) material with a pulling capacity not less than 35 kN.
- ii) One number Galvanized Steel Pulling Grip for messenger (dia 6 to 8 mm) load 35 kN
- iii) One number Galvanized Steel Pulling Grip for rope (same as messenger) load 35 kN.
- iv) One number Swivel for connecting pulling grips of Bundle to rope. Load of swivel shall be 35 kN minimum.

5.5 Split Pulling Grip to pull bundled conductor when ends are not available

Split Pulling Grip shall consist of double weave split mesh for medium duty cable pulling. It shall be made of polypropylene (synthetic) material with a pulling capacity not less than 15 kN.

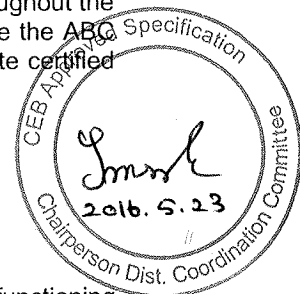
6.0 QUALITY ASSURANCE

The manufacturer shall possess ISO 9001:2008 Quality Assurance Certification valid throughout the delivery period of this bid, for the manufacture of tools of ABC (33kV), for the plant where the ABC (33kV) tools are being manufactured. The Bidder shall furnish a copy of the ISO certificate certified as true copy of the original by the manufacturer, along with the offer.

7.0 ADDITIONAL REQUIREMENTS

7.1 Spares

The supplier shall specify the spare parts required for 5 years of proper and continuous functioning of the tools for erection of ABC cables. List of spares should be supplied with the offer and the bidder shall furnish details of such spares. A schedule of prices and quantities of spare parts shall be given



by the supplier and the cost of spares shall not be taken for the evaluation.

7.2 Packing

Aerial Bundled Conductor Stringing Tools shall be packed in suitable carrying cases and operating instructions in English shall also be provided together with the tool.

8.0 TESTS

The Tools subjected to the following Type Tests, shall have a proven design.

8.1 Hydraulic Press

- a) Operating Test
- b) Bleeding Test
- c) Movable Arm Backlash Test
- d) Triggering Pressure Test
- e) Suction Test
- f) Discharge Test
- g) Decompression Test
- h) Flow rate Test

8.2 For Plastic Wedge Separator

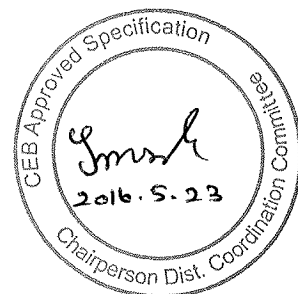
- a) Di-electric withstand Test (shall withstand 5 kV/mm for minute)

8.3 Stringing Block

- a) Working Load Test (Shall withstand 800 kg)

8.4 Open Type Pulling Grip and Swivel

- a) Mechanical Loading Test for
 - i) Pulling Grip for twisted bundled made in polypropylene (Pulling Capacity > 35kN)
 - ii) Galvanized Steel Pulling Grip for messenger neutral (>35 kN)
 - iii) Galvanized Steel Pulling grip for rope (>35 kN)
 - iv) Swivel for connecting pulling grips of bundle to rope (>35 kN)



8.5 Type Test Certificates

Certificates of Type Tests performed shall conform to the relevant Standards Specified. The Test Certificates should clearly identify the equipment concerned, showing the manufacturer's identity, Type No. and Basic Technical Parameters.

The test certificates referred to shall be issued by a recognized **independent testing authority acceptable to the purchaser.**

9.0 INFORMATION TO BE SUPPLIED WITH THE OFFER

The selected Bidder shall supply all relevant drawings, technical literature, hand books etc. in English, in order to facilitate proper usage.

The Bid shall be accompanied with the following also;

- a. English version of catalogues describing the equipment and indicating the type/model number.

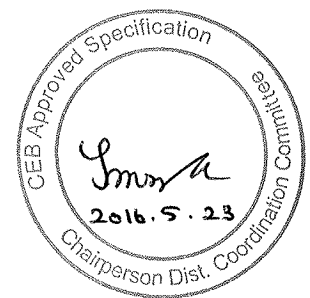
- b. Technical literature in English describing the constructional and operational features of the equipment.
- c. Dimensional drawings of the tools
- d. Packing details.
- e. Completed schedule of particulars as per Annexure A.
- f. Type test certificates conforming to Clause 8.5

The Bidder shall furnish information to verify that manufacturer has over 5 years of manufacturing tools for ABC.

Failure to furnish the above details, data as per Clause 9.0 will result in the offer being rejected.

10.0 ANNEX

- Annex A - Schedule of Guaranteed Technical Particulars - To be filled by the manufacturer.
- Annex B - Non-Compliance Schedule



Annex- A

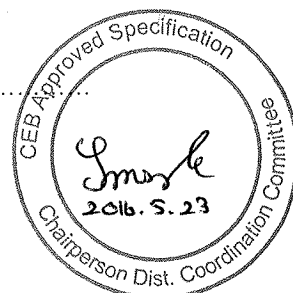
SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS

(Following Information shall be furnished with the offer for each rating)

1.	a) Name of manufacturer		
	b) Country of origin		
2.	Applicable Standard		
3.	Hydraulic press particulars		
	(a) Capacity	kN	
	(b) Weight	kg	
4.	Particulars of dies		
	(a) Material		
	(b) Across Flat Dimensions	mm	
5.	Wedge Separator particulars		
	(a) Material		
	(b) Di-electric strength	kV/mm	
6.	Approximate breaking strength of Stringing Block	kN	
7.	Pulling Grip for twisted bundle Particulars		
	(a) Material		
	(b) Approximate Breaking Strength	kN	
8.	Pulling Grips for messenger and rope particulars		
	(a) Material		
	(b) Approximate Breaking Strength	kN	
9.	Split Pulling Grip Particulars		
	(a) Material		
	(b) Approximate Breaking Strength	kN	
10.	Whether a certified copy of ISO 9001:2008 furnished with the offer?	As per clause 6.0	
11.	Whether the entire Type Test Certificates in accordance with clause 8.5 furnished with the offer?	As per clause 8.5	

.....
Signature of the Manufacturer and seal.....
Date

I/We certify that the above data are true and correct

.....
Signature of the Bidder and seal.....
Date

Non-Compliance Schedule

On this schedule the bidder shall provide a list of non-compliances with this specification, documenting the effects that such non-compliance is likely to have on the equipment life and operating characteristics. Each non-compliance shall be referred to the relevant specification clause.

Clause No.	Non-Compliance

.....
Signature of the Manufacturer/bidder and seal

.....
Date

