

**COPY**

Invitation to Bid No. :

Specification No. : R-506/2546

**C      Material, equipment, and specifications for CONNECTORS AND ELECTRICAL CONTACT COMPOUND**

**C1      General material and packing instructions**

Additional to the general instructions, the following shall be observed :

**1a      Scope**

These specifications cover mechanical, compression and wedge type connectors to connect conductors, and electrical contact compound.

**1b      Standard**

The connectors shall be manufactured and tested in accordance with the latest IEEE, ANSI, EEI-NEMA, ASTM, VDE Regulations and DIN, or equivalent; unless otherwise specified in these specifications.

The bodies of connectors shall be of aluminium-alloy according to manufacturer's standards, unless otherwise specified in these specifications.

**1c      Principal requirement**

**1c.1      General**

The connectors shall be suitable for connecting stranded and/or solid conductors according to DIN, TIS, or equivalent; unless otherwise specified in these specifications.

**1c.2      Bolted type connector**

For the purpose of against self loosening, each bolt shall be furnished with at least of one (1) locknut. The bolts shall be designed for single-wrench installation. Each U-bolt is counted as two (2) bolts. The bolts shall be tightened to torque levels according to these shown in the table below or according to manufacturer's recommendation; the technical details of tightening torque levels shall be submitted on request.

All ferrous materials shall be hot-dip galvanized after manufacturing; except bolts, lockwashers, washers, and nuts up to M6 shall be electro galvanized; according to the relevant standards or having the thickness or zinc coating shown in the table below.

Sizes of Bolts, lockwashers, Washers, and Nuts	Tightening Torque Level of Galvanized Steel Bolts kgf-m	Minimum Thickness of Zinc Coating mm
M 6 (1/4")	-	0.010
M 8 (5/16")	2.0	0.040
M 10 (3/8")	2.7	0.040
M 12 (1/2")	5.5	0.040
M 14 (9/16")	6.5	0.040
M 16 (5/8")	7.5	0.040
M 20 (3/4")	11.0	0.045

#### 1c.3 Compression type connector

Full tension sleeves and partial tension sleeves shall withstand at least 90% and 40%, respectively, of the minimum breaking strength of the conductors for which they are designed. Each sleeve shall be prefilled with electrical contact compound and closed both ends by plastic caps.

Conductor barrel of each terminal lug shall be prefilled with electrical contact compound and closed by a plastic cap.

Tap connectors shall be prefilled with electrical contact compound and packed in suitable packages, one (1) or two (2) pieces per package.

#### 1c.4 Compression deadend assembly set

The aluminium body and aluminium jumper terminal shall accommodate aluminium conductor which is according to TIS; and the conductor barrel shall be prefilled with electrical contact compound and closed by a plastic cap.

**1c.5 Wedge type connector**

The wedge type connector shall consist of C-shaped member and wedge, and made of aluminium alloys which shall be described.

The wedge type connector shall pass the current cycle tests Class A (500 cycles) in accordance with the latest EEL-TDJ-162/NEMA C3, ANSI C 119.4 or equivalent.

Bidders who have never submitted the test reports of current cycle tests shall submit either prior to receipt of bids or within fifteen (15) days of the bid closing date, for saving bid consideration time, the item without submitting the report shall be rejected.

**1c.6 Marking**

Each connector shall be marked, on the body, at least as follows :

- (1) Applicable conductor type and size.
- (2) Manufacturer's symbol.
- (3) Marks to press, for compression type only.
- (4) Words "FULL TENSION" and "PARTIAL TENSION", on full tension sleeves and partial tension sleeves, respectively.

Except for compression type tap connectors for main line size less than 10 mm<sup>2</sup> (not including size 10 mm<sup>2</sup>), if the applicable conductor type and size can not be marked on the bodies, the marks shall be marked on individual packages.

**1c.7 Sample**

Free samples shall be supplied on request. The samples will not be returned.

**1d Packing**

Each item shall be packed separately in suitable packages in sets or pieces of 1, 2, 100, 200, 250, or 300.

Except :

PEA Material No.	Preformed fittings	sets or pieces per package
02300103	Connector, parallel groove	75
02310001	Connector, dead-end type	100

Packages of same item may be packed together in suitable cases.

**C2 Material and packing data to be given by bidder**

2a For each item offered, the following details shall be submitted with the bid :

Catalogue number.

Specifications of materials used for the component parts (body, bolts, nuts, screws, lockwashers, washers, etc.) .

Surface finishing of the component parts.

Nominal cross-sectional area in  $\text{mm}^2$  of conductor for which the connector is designed.

Diameter in mm of conductor for which the connector is designed.

Material of conductors for which the connector can be used (Al, ACSR, Cu, etc.) .

Recommended tightening torques for bolts in kgf-m .

Weight in kg/100 sets or pieces.

2b It shall be advised whether the connectors should be protected by armour tape or preformed line guards, etc.

2c For each item offered, a drawing with dimensions in mm and marking details shall be submitted with the bid. For compression type connector, a drawing with the dimensions including inside and outside diameters and marking details shall be submitted.

2d Number of aluminium-alloy copper-alloy, and/or the chemical compositions of the bodies of connectors.

**2e Packing details**

Packing method.

Number of sets or pieces in each package (maximum 300 sets or pieces in one package)

Principal dimensions of each package in cm .

Volume of each package in  $m^3$  .

Gross weight of each package in kg .

Net weight of each package in kg .

Number of packages.

If several packages are contained in one big case, further details are required :

Number of packages in each case.

Principal dimensions of each case in cm .

Volume of each case in  $m^3$  .

Gross weight of each case in kg .

Number of cases.

Invitation to Bid No. :

Specification No. : R-506/2546

**COPY**

C3 Schedule of detailed requirement

Item	PEA Material No.	Quantity	Description
1	02400002		Compression splicing sleeve, full tension, for aluminium conductor according to TIS 85-2522 size 50 mm <sup>2</sup> , length not less than 155 mm, see Drawing No. SA2-015/40002.
2	02400004		Ditto as Item 1, but size 95 mm <sup>2</sup> , length not less than 165 mm.
3	02400005		Ditto as Item 1, but size 120 mm <sup>2</sup> , length not less than 250 mm.
4	02400007		Ditto as Item 1, but size 185 mm <sup>2</sup> , length not less than 330 mm.
5	02400008		Ditto as Item 1, but size 240 mm <sup>2</sup> , length not less than 360 mm.
6	02400009		Ditto as Item 1, but size 400 mm <sup>2</sup> , length not less than 380 mm.
7	02400102		Compression splicing sleeve, full tension, for ACSR conductor according to TIS 86-2522 size 50/8 mm <sup>2</sup> , length not less than 440 mm, see Drawing No. SA2-015/40002.
8	02400104		Ditto as Item 7, but size 95/15 mm <sup>2</sup> , length not less than 500 mm.
9	02410002		Compression splicing sleeve, partial tension, for aluminium conductor according to TIS 85-2522 size 50 mm <sup>2</sup> , length not less than 85 mm, see Drawing No. SA2-015/40002.
10	02410004		Ditto as Item 9, but size 95 mm <sup>2</sup> , length not less than 105 mm.
11	02410005		Ditto as Item 9, but size 120 mm <sup>2</sup> , length not less than 105 mm.
12	02410007		Ditto as Item 9, but size 185 mm <sup>2</sup> , length not less than 125 mm.
13	02410008		Ditto as Item 9, but size 240 mm <sup>2</sup> , length not less than 145 mm.
14	02410009		Ditto as Item 9, but size 400 mm <sup>2</sup> , length not less than 210 mm.
15	02410010		Ditto as Item 9, but size 625 mm <sup>2</sup> , length not less than 250 mm.

Invitation to Bid No. :

Specification No. : R-506/2546

**C3 Schedule of detailed requirement**

Item	PEA Material No.	Quantity	Description
16	02410102		Compression splicing sleeve, partial tension, for ACSR conductor according to TIS 86-2522 size 50/8 mm <sup>2</sup> , length not less than 85 mm, see Drawing No. SA2-015/40002.
17	02410104		Ditto as Item 16, but size 95/15 mm <sup>2</sup> , length not less than 115 mm.
18	09080000		Compound, electrical contact aid and anti-oxidation for use in bolted connections of aluminium-to-aluminium and aluminium-to-copper. The compound shall be contained in handy squeeze packages.
19	02300102		Connector, parallel groove, 2-bolt type, length not less than 55 mm, for electrical tap off connection of aluminium, aluminium-alloy, and ACSR conductors to aluminium, aluminium-alloy, and ACSR conductors, with : Main : diameter range of 6.42 mm to 13.60 mm (size 25 mm <sup>2</sup> to 95 mm <sup>2</sup> ). Tap : diameter range of 6.42 mm to 13.60 mm (size 25 mm <sup>2</sup> to 95 mm <sup>2</sup> ).
20	02300103		Ditto as Item 19, but 3-bolt type length, not less than 90 mm. with : Main : diameter range of 10.75 mm to 17.64 mm (size 70 mm <sup>2</sup> to 185 mm <sup>2</sup> ). Tap : diameter range of 10.75 mm to 17.64 mm (size 70 mm <sup>2</sup> to 185 mm <sup>2</sup> ).
21	02300104		Ditto as Item 19, but 3-bolt type length, not less than 100 mm. with : Main : diameter range of 12.60 mm to 20.25 mm (size 95 mm <sup>2</sup> to 240 mm <sup>2</sup> ). Tap : diameter range of 12.60 mm to 20.25 mm (size 95 mm <sup>2</sup> to 240 mm <sup>2</sup> ).

Invitation to Bid No. :

Specification No. : R-506/2546

**C3 Schedule of detailed requirement**

Item	PEA Material No.	Quantity	Description
22	02310000		Connector, dead-end type, for aluminium conductor diameter range of 6.42 mm to 7.56 mm (size 25 mm <sup>2</sup> to 35 mm <sup>2</sup> ).
23	02310001		Ditto as Item 22, but aluminium conductor diameter range of 9.06 mm to 10.75 mm (size 50 mm <sup>2</sup> to 70 mm <sup>2</sup> ).
24	02310002		Ditto as Item 22, but aluminium conductor diameter range of 12.60 mm to 14.25 mm (size 95 mm <sup>2</sup> to 120 mm <sup>2</sup> ).
25	02420101		Connector (or lug), terminal, compression type made of aluminium-alloy, for connecting aluminium cable according to TIS 293 size 35 mm <sup>2</sup> to terminal pad, length not less than 125 mm, see Drawing No. SA2-015/24029.
26	02420102		Ditto as Item 25, but size 50 mm <sup>2</sup> to terminal pad, length not less than 125 mm.
27	02420103		Ditto as Item 25, but size 70 mm <sup>2</sup> to terminal pad, length not less than 130 mm.
28	02420104		Ditto as Item 25, but size 95 mm <sup>2</sup> to terminal pad, length not less than 140 mm.
29	02420106		Connector (or lug), terminal, compression type made of aluminium-alloy, for connecting aluminium cable according to TIS 85 size 185 mm <sup>2</sup> to terminal pad, length not less than 155 mm, see Drawing No. SA2-015/24029.



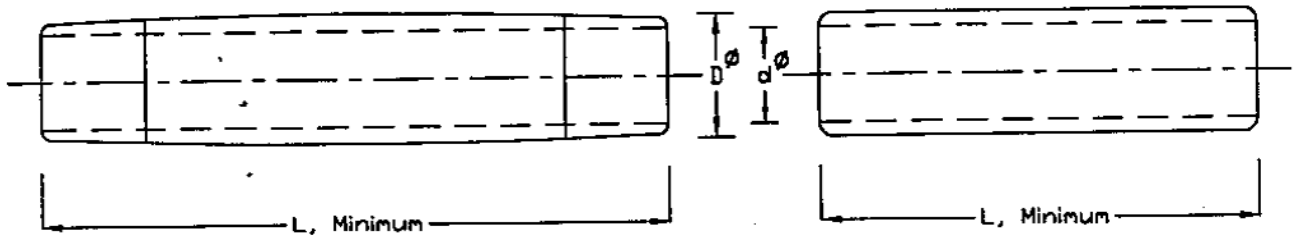
Invitation to Bid No. :

Specification No. : R-506/2546

**C3 Schedule of detailed requirement**

Item	PEA Material No.	Quantity	Description
30	02340001		Connector, wedge type, for electrical tap off connection of aluminium conductor to aluminium conductor, with : Main : diameter of 15.80 mm - 17.64 mm. (size 185 mm <sup>2</sup> ) Tap : diameter of 12.80 mm - 14.25 mm. (size 120 mm <sup>2</sup> )
31	02340000		Ditto as Item 30, but : Main- : diameter of 15.80 mm - 17.64 mm. (size 185 mm <sup>2</sup> ) Tap : diameter of 11.30 mm - 12.60 mm. (size 95 mm <sup>2</sup> )
32	02340002		Ditto as Item 30, but : Main : diameter of 15.80 mm - 17.64 mm. (size 185 mm <sup>2</sup> ) Tap : diameter of 8.25 mm - 9.06 mm. (size 50 mm <sup>2</sup> )
33	02340100		Power-actuated tool, for installation, and removing the wedge type connector in Item 30, Item 31 and Item 32, complete with tool for cleaning the power-actuated tool and tool for cleaning the conductor, and carrying bag.
34	02340101		Power-booster (cartridge), colour-coded to match the connector size, for driving wedge into C-shaped member, for use with wedge type connector in Item 30, Item 31 and Item 32 .
35	02340102		Ditto as Item 34, but for removing the wedge from C-shaped member.  <b>Note :</b> 1. Enclosed Drawing No. SA2-015/40002 and SA2-015/24029. 2. The bidder has to supply five(5) samples and approximately 0.5 kg of the COMPOUND, within fifteen (15) days, counted from the Committee's request. The samples will not be returned.

# PRELIMINARY



COMPRESSION SPLICING SLEEVE FOR CONDUCTORS ACCORDING TO TIS

CONDUCTOR		DIMENSIONS					
		FULL TENSION SLEEVE			PARTIAL TENSION SLEEVE		
NOMINAL CROSS-SECTION AREA mm <sup>2</sup>	OVERALL DIAMETER mm	$\varnothing$ D mm	$\varnothing$ d mm	L mm, Min.	$\varnothing$ D mm	$\varnothing$ d mm	L mm, Min.
ALUMINIUM STRANDED CONDUCTORS ACCORDING TO TIS 85-2522							
50	9.06	16.0(±0.5)	10.0(±0.5)	155	16.0(±0.5)	10.0(±0.5)	85
95	12.60	23.0(±0.5)	13.5(±0.5)	165	23.0(±0.5)	13.5(±0.5)	105
120	14.25	25.5(±0.5)	16.0(±0.5)	250	23.0(±0.5)	15.0(±0.5)	105
185	17.64	28.5(±0.5)	18.5(±0.5)	330	28.5(±0.5)	18.3(±0.5)	125
240	20.25	34.5(±0.5)	21.5(±0.5)	360	32.5(±0.5)	21.5(±0.5)	145
400	25.65	43.0(±0.5)	27.0(±0.5)	380	43.0(±0.5)	27.0(±0.5)	210
625	32.56	—	—	—	53.5(±0.5)	35.5(±0.5)	250
ALUMINIUM CONDUCTORS STEEL REINFORCED ACCORDING TO TIS 86-2522							
50/8	9.60	20.5(±0.5)	10.5(±0.5)	440	16.0(±0.5)	10.7(±0.5)	85
95/15	13.60	30.0(±0.5)	14.5(±0.5)	500	22.5(±0.5)	14.7(±0.5)	115

## NOTE :

1. FULL TENSION SLEEVES AND PARTIAL TENSION SLEEVES SHALL WITHSTAND LEAST 90% AND 40% RESPECTIVELY OF THE MINIMUM BREAKING STRENGTH OF THE CONDUCTORS FOR WHICH THEY ARE DESIGNED.
2. THE SLEEVE SHALL BE PRE-FILLED WITH ANTI-CORROSION COMPOUND AND CLOSED BOTH ENDS BY PLASTIC CAPS.
3. EACH SLEEVE SHALL BE MARKED WITH APPLICABLE CONDUCTOR SIZE, MARKS TO PRESS, AND MANUFACTURER'S SYMBOL.
4. FIGURES IN PARENTHESES ARE TOLERANCE.
5. THIS DRAWING IS ATTACHED TO SPECIFICATIONS OF COMPRESSION TOOLS AND OF COMPRESSION SPLICING SLEEVES.

กองมาตรฐานระบบไฟฟ้า ฝ่ายมาตรฐานและความปลอดภัย การไฟฟ้าส่วนภูมิภาค

มิติเป็น

วันที่ 10 ตุลาคม 2545

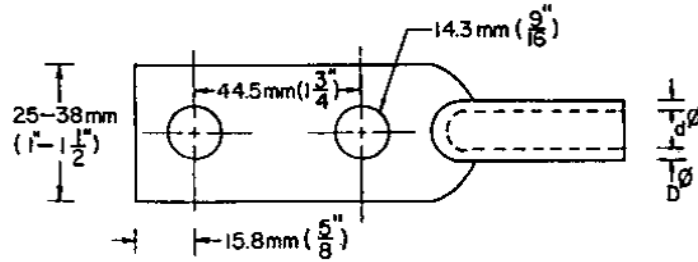
TABLE OF COMPRESSION SPLICING

SLEEVES ONE PIECE TYPE

แบบเลขที่ SA2-015/40002

แผ่นที่ 1 ของจำนวน 1 แผ่น

การประกอบเลขที่  
ASSEMBLY NO.



PRELIMINARY

COMPRESSION TYPE TERMINAL LUG, FOR ALUMINIUM CABLE

COMPRESSION TYPE, TERMINAL LUG	FOR ALUMINIUM CABLE		DIMENSIONS OF COMPRESSION TYPE TERMINAL LUG			
	SIZE	OVERALL DIAMETER OF CONDUCTOR	$\phi$	$\phi$	L1	L2
PEA MAT. NO.	mm <sup>2</sup>	mm	mm	mm	mm, Min	mm
02420101	35	6.95	14.0 ( $\pm 0.4$ )	7.85 ( $\pm 0.15$ )	125	75 (+5/0)
02420102	50	8.33	16.0 ( $\pm 0.5$ )	9.75 ( $\pm 0.25$ )	125	75 (+5/0)
02420103	70	9.73	18.5 ( $\pm 0.5$ )	11.25 ( $\pm 0.25$ )	130	75 (+5/0)
02420104	95	11.45	23.0 ( $\pm 0.5$ )	13.25 ( $\pm 0.25$ )	140	75 (+5/0)
02420105	120	12.95	23.0 ( $\pm 0.5$ )	14.75 ( $\pm 0.25$ )	145	75 (+5/0)
02420106	185	17.64	28.5 ( $\pm 0.5$ )	18.3 ( $\pm 0.5$ )	155	75 (+5/0)

- NOTES:
- FIGURES IN PARENTHESES IN THE TABLE, ARE TOLERANCE.
  - THE LUG SHALL BE PREFILLED WITH ELECTRICAL CONTACT COMPOUND AND CAPPED BY PLASTIC CAPS.
  - EACH LUG SHALL BE MARKED WITH APPLICABLE CONDUCTOR SIZE, MARKS TO PRESS, AND MANUFACTURER'S SYMBOL

กองวิศวกรรมไฟฟ้าและเครื่องมือ ฝ่ายวิศวกรรม	การไฟฟ้าส่วนภูมิภาค	ใช้แทนแบบ
ผู้เรียบ ผู้พิจารณา วิศวกร หัวหน้าแผนก หัวหน้ากอง ผู้ควบคุมการจ่าย	ผู้ว่าการ	ถูกแทนโดยแบบ
รองผู้ว่าการฝ่ายเทคนิค	CONNECTOR (OR LUG), TERMINAL, COMPRESSION TYPE	เขียนหน้าวันที่ 20 ต.ค. 24 แก้ไขหน้าวันที่ 20 ก.ค. 2530 มีที่เป็น ผาตราสาร
		แบบเลขที่ SA2-015/24029 แผ่นที่ 1 ของจำนวน 1 แผ่น