

Specification

for

Current fittings

(Busbars, supports and spacers)

1. BUSBARS.

Busbar deviating triangular type IIIOT-A(xxx) or IIIOT-M(xxx), where: - **III** – busbar, **O** – deviating, **T** – triangle, **A/M** – from Al/C_u and **(xxx)** – width of the rectangular lead current bar. They are applied when there's a deviation of Al or C_u bar with widths: (40, 60, 80, 100 and 120) mm.

Serves as a lead current deviating, non resistant to strain, insulated from the other parts of construction compound.

IIIOT-A(xxx) and IIIOT-M(xxx) are manufactured in five type of sizes, more precisely:

Type of the busbar	Type of the busbar
IIIOT – A 40	IIIOT – M 40
IIIOT – A 60	IIIOT – M 60
IIIOT – A 80	IIIOT – M 80
IIIOT – A 80	IIIOT – M 100
IIIOT – A 120	IIIOT – M 120

Busbar, triangular for mounting on a fin: type IIPT-A(xxx) or IIPT-M(xxx), where:- **III** – busbar, **P** – for mounting on a fin, **T** – triangular, **A/M** – from Al/C_u and **(xxx)** – width of the rectangular lead current bar:- serves for attachment of a fin on Al or C_u bar with widths of: (40, 60, 80, 100 and 120) mm. It is attached to the head of a lead or support insulator.

IIPT-A(xxx) or IIPT-M(xxx) are manufactured in five type of sizes, more precisely:

Type of the busbar	Type of the busbar
IIPT – A 40	IIPT – M 40
IIPT – A 60	IIPT – M 60
IIPT – A 80	IIPT – M 80
IIPT – A 100	IIPT – M 100
IIPT – A 120	IIPT – M 120

Busbar for mounting on surface – rectangular type ШШП2-A(xxx) or ШШП2-M(xxx), where:- Ш – busbar, П – for mounting on surface, П – rectangular, 2 – for tightening of the bar with two bolts, A/M – from Al/C_u and (xxx) – width of the rectangular lead current bar. Serves for attachment of copper or aluminum bars to insulators. Width of the bar: - (40,60,80,100,120) mm.

ШШП2-A(xxx) and ШШП2-M(xxx) are manufactured in five type of sizes.

Type of the busbar	Type of the busbar
ШШП2 – A 40	ШШП2 – M 40
ШШП2 – A 60	ШШП2 – M 60
ШШП2 – A 80	ШШП2 – M 80
ШШП2 – A 100	ШШП2 – M 100
ШШП2 – A 120	ШШП2 – M 120

Busbar for mounting on a surface – rectangular type ШШП4-A(xxx) or ШШП4-M(xxx), where:- Ш – busbar, П – for mounting on surface, П – rectangular, 4 – for tightening of the bar with four bolts, A/M – from Al/C_u and (xxx) – width of the rectangular lead current bar. Serves for attachment of copper or aluminum bars to the insulators. Width of the bar: - (40,60,80,100,120) mm.

ШШП4-A(xxx) and ШШП4-M(xxx) are manufactured in five type of sizes, and more precisely:

Type of the busbar	Type of the busbar
ШШП4 – A 40	ШШП4 – M 40
ШШП4 – A 60	ШШП4 – M 60
ШШП4 – A 80	ШШП4 – M 80
ШШП4 – A 100	ШШП4 – M 100
ШШП4 – A 120	ШШП4 – M 120

Busbars for mounting on surface – square type ШПК-A(xxx) or ШПК-M(xxx), where: - Ш – busbar, П – for mounting on surface, К – square, A/M – from Al/C_u and (xxx) – width of the rectangular lead current bar. Serves for attachment with the flat side of aluminum or copper bars to insulators. Width of the bar is:- (40, 60, 80, 100 and 120)mm. They tight the bar with four bolts.

ШПК-A(xxx) и ШПК-M(xxx) are manufactured in four type of sizes:

Type of the busbar	Type of the busbar
ШПК – A 60	ШПК – M 60
ШПК – A 80	ШПК – M 80
ШПК – A 100	ШПК – M 100
ШПК – A 120	ШПК – M 120

Busbar deviating – square type ШОК-А(ххх) or ШОК-М(ххх), where:- **Ш** – busbar, **О** – deviating, **К** – square, **А/М** – from АI/C_u and **(ххх)** – width of the rectangular lead current bar. Serves as deviation from the lead current bar and is a compound, non resistant to strain. Width of the bar is:- (60, 80, 100 and 120) mm. They tighten the bars with four bolts.

ШОК-А(ххх) and ШОК-М(ххх) are manufactured in four types of sizes, more precisely:

Type of the busbar	Type of the busbar
ШОК – А 60	ШОК – М 60
ШОК – А 80	ШОК – М 80
ШОК – А 100	ШОК – М 100
ШОК – А 120	ШОК – М 120

2.SUPPORTS.

Support pipe fixed type HTΦ4 – D, where:- **H** – support, **T** – pipe, **Φ** – fixed, **4** – with four attaching bolts to the cap of the insulator and **D** – diameter of the lead current pipe. It is used mainly for indoor mounting of lead current pipes with outer diameter Ø45mm to Ø80mm. It fixes the pipe (round lead current bar) to the support and does not allow its relevant movement towards the support.

Support pipe free type HTC4 – D, where:- **H** – support, **T** – pipe, **C** – free, **4** – with four supporting bolts to the cover of the insulator and **D** – diameter of the lead current pipe. It is used mainly for indoor mounting of lead current pipes with outer diameter Ø45mm to Ø80mm. The pipe can achieve a certain movement (sliding) to the support, for compensating the linear thermal deformities up to 1 mm in axial direction.

Support pipe fixed type HTΦ2 – D, where:- **H** – support, **T** – pipe, **Φ** – fixed, **2** – with two attaching bolts to the cover of the insulator, situated collinear on the lead current pipe and **D** – diameter of the lead current pipe. It is used mainly for indoor mounting of lead current pipes, with outer diameter Ø45mm to Ø80mm. It fixes the pipe to the support and does not allow its movement towards the support.

Support pipe free type HTC2 – D, where:- **H** – support, **T** – pipe, **C** – free, **2** – with two attaching bolts to the cover of the insulator, collinear to the lead current pipe and **D** – diameter of the lead current pipe. It is used mainly for indoor mounting of lead current pipes with outer diameter Ø45mm to Ø80mm. The pipe can achieve certain movement (sliding) towards the support for compensating of the linear thermal deformities up to 1 mm in axial direction.

3. SPACER

The aluminum parts of the spacers are cast in the color foundry of the Company and after that part of the surfaces are processed mechanically. The casts are from aluminum alloy AlSiMg according to БДC 9802 – 74.

In the attachments of this specification, are shown the two types of spacers, manufactured by the Company, more precisely:

Spacer remote type **PД d/A**, where: **P** – spacer, **Д** – remote, **d** – diameter of the opening for collocation of the lead current ropes and **A** – axis distance between the shaft conductors of the phase of the electric conductor. Serves for fixing itself to the shaft conductors of a same phase of the air transmission line HV (high voltage) or bar system in ODI (Open distribution installation) for HV.

The values of the diameter **d** of the opening of the lead current rope are: 27,5mm for ropes with section 400 mm² and 30mm for ropes with section 500 mm². The distance **A** between the centers of the ropes of the shaft conductors of the phase of the electric conductor are 75 mm, 120mm, 200mm, 250 mm and 300 mm.

This type of spacer fixes to itself the shaft conductors and between them and does not allow movements. Only joint movements of the shaft conductors and the spacer are possible.

The spacer itself is a solid cast, reflecting upper and lower part, which tighten between themselves the two shaft conductors of the phase with two bolt connections. The combination of spacers between “1st and 2nd”, “2nd and 3rd” and “3rd and 1st” shaft conductors of the same phase three wire shaft conductors could be used. It is the same with four wire shaft conductors.

Spacer remote blind type PДГ d/L, where: **P** – spacer, **Д** – remote, **Г** – blind, **d** – diameter of the opening for emplacement of the lead current ropes and **L** – axial distance between the shaft conductors of the electric conductor phase. Serves for fixing to itself the shaft conductors of the same phase of the air conducting line HV or bar system in ODI (open distribution installation) for HV.

The values of the diameter **d** of the opening for the lead current rope are: 27,5mm for ropes with section 400 mm² and 30mm for ropes with section 500 mm². The distance **L** between the centers of the shaft conductors of the electric conductor phase are 400 mm and 500 mm.

The spacer itself consists of 4 reflective to one another casts, as every two of them tighten one shaft conductor with the help of bolt connection. Thus they form two assemblies, which with the help of two braces are knuckle – joined with a steel plate, manufactured from steel 35 – hot galvanized. This way the spacer fixes the shaft conductor only to this side, to which it is attached. Joint movements of the shaft conductors and the spacer are possible, as well as between the different parts of the spacer.

The combination of spacers between shaft conductors “1st and 2nd”, “2nd and 3rd” and “3rd and 1st” of the same phase is used in three wire shaft conductors. It is similar with four wire shaft conductors.

Specification

Current clamps

1. Aluminum clamps

- 1.1 Clamp aluminum – rope – single – type KA-B-E-S, where $S = 120\text{mm}^2$ 4 500mm^2 is the section of the rope.
- 1.2 Clamp aluminum rope –rope, straight type KA-BB-Π 2xS, where $S = 50\text{mm}^2$ 4 70mm^2 is the section of the joined rope.
- 1.3 Clamp aluminum rope –rope, straight type KA-BB-Π 2xS, where $S = 95\text{mm}^2$ 4 120mm^2 is the section of the joined rope.
- 1.4 Clamp aluminum rope –rope, straight type KA-BB-Π 2xS, where $S = 150\text{mm}^2$ 4 185mm^2 is the section of the joined ropes.
- 1.5 Clamp aluminum rope –rope, straight type KA-BB-Π S1/S2, where $S1 = 600\text{mm}^2$, as $S2 = 150\text{mm}^2$ are sections of the joined ropes.
- 1.6 Clamp aluminum rope –rope, parallel type KA-BB-Y 2xS, where $S = 120\text{mm}^2$ 4 500mm^2 600mm², is the section of the joined ropes.
- 1.7 Clamp aluminum rope – rope T shaped type KA-BB-T S1/S2, where $S1$ and $S2 = 95\text{mm}^2$ 4 150mm^2 are sections of the joined ropes.
- 1.8 Clamp aluminum rope – rope T shaped type KA-BB-T S1/S2, where $S1 = 600\text{mm}^2$ as $S2 = 150\text{mm}^2$ are the sections of the joined ropes.
- 1.9 Clamp aluminum rope – rope T shaped type KA-BB-T S1/S2, where $S1$ and $S2 = 120\text{mm}^2$ 4 500mm^2 are the sections of the joined ropes.
- 1.10 Clamp aluminum rope – two ropes T shaped type KA-B-2B-T 150/2x150mm², where 150 mm² is the section of the joined ropes.
- 1.11 Clamp aluminum rope – two ropes T shaped type KA-B-2B-T 150/2x600mm², where 600 mm² is the section of the two ropes of the main line, as 150 mm² is the section of the rope for the T shaped deviation.
- 1.12 Clamp aluminum plate – rope straight type KA-ΠЛB-Π S, where $S = 95\text{mm}^2$ 4 150mm^2 is the section of the joined rope.
- 1.13 Clamp aluminum plate – rope straight type KA-ΠЛB-Π S, where $S = 120\text{mm}^2$ 4 500mm^2 is the section of the joined rope.
- 1.14 Clamp aluminum plate – two ropes straight type KA-ΠЛ2B-Π 2xS, where $S = 95\text{mm}^2$ 4 150mm^2 is the section of the joined ropes.
- 1.15 Clamp aluminum plate – two ropes straight type KA-ΠЛ2B-Π 2xS where $S = 120\text{mm}^2$ 4 500mm^2 is the section of the joined ropes.
- 1.16 Clamp aluminum plate – two ropes straight type KA-ΠЛ2B-Π 2xS, where $S = 120\text{mm}^2$ 4 600mm^2 is the section of the joined ropes.
- 1.17 Clamp aluminum plate – three ropes straight type KA-ΠЛ3B-Π 3xS, where $S = 120\text{mm}^2$ 4 600mm^2 is the section of the joined ropes.
- 1.18 Clamp aluminum plate – rope “Г” shaped type KA-ΠЛB-Г S, where $S = 120\text{mm}^2$ 4 500mm^2 is the section of the joined rope.

- 1.19 Clamp aluminum plate – two ropes “Г” shaped type KA-Пл2B-Г 2xS, where $S = 120\text{mm}^2$ 4 500mm^2 is the section of the joined ropes.
- 1.20 Clamp aluminum pipe – rope straight type KA-TB-П Ø30 S, where Ø 30 mm is the diameter of the lead current pipe, as $S = 95\text{mm}^2$ 4 150mm^2 is the section of the joined rope.
- 1.21 Clamp aluminum pipe – rope straight type KA-TB-П Ø40 S, where Ø 40 mm is the diameter of the lead current pipe, as $S = 95\text{mm}^2$ 4 150mm^2 is the section of the joined rope.
- 1.22 Clamp aluminum pipe – rope straight type KA-TB-П Ø40 S, where Ø (3442) mm is the diameter of the lead current pipe, as $S = 120\text{mm}^2$ 4 4500mm^2 is the section of the joined rope.
- 1.23 Clamp aluminum pipe – two ropes straight type KA-T2B-П Ø40/2x S, where Ø 40mm is the diameter of the lead current pipe, as $S = 95\text{mm}^2$ 4 150mm^2 is the section of the joined ropes.
- 1.24 Clamp aluminum pipe – two ropes straight type KA-T2B-П Ø40/2x S, where Ø 40 mm is the diameter of the lead current pipe, and $S = 120\text{mm}^2$ 4 500mm^2 is the section of the joined ropes.
- 1.25 Clamp aluminum pipe – two ropes straight type KA-T2B-П Ø60/2x 600 mm², where Ø 60 mm is the diameter of the lead current pipe, and $S = 600\text{mm}^2$ is the section of the joined ropes.
- 1.26 Clamp aluminum pipe – ropes T shaped type KA-TB-T Ø30/150 mm², where Ø 30 mm is the diameter of the lead current pipe, and $S = 150\text{mm}^2$ is the section of the joined rope.
- 1.27 Clamp aluminum pipe - rope T-shaped type KA-TB-T Ø40/600 mm², where Ø 40 mm is the diameter of the lead current pipe as $S = 600\text{mm}^2$ is the section of the joined rope.
- 1.28 Clamp aluminum pipe - two ropes T-shaped type KA-T2B-T Ø30/2x150 mm², where Ø 30 mm is the diameter of the lead current pipe, as $S = 150\text{mm}^2$ is the section of the joined ropes.
- 1.29 Clamp aluminum pipe – two ropes T-shaped type KA-T2B-T Ø/2xS, where Ø (30442) mm is the diameter of the lead current pipe, as $S = (150\text{mm}^2$ 4 $4500\text{mm}^2)$ is the section of the joined ropes.
- 1.30 Clamp aluminum pipe – pipe straight type KA-TT-П Ø30/ Ø30 mm, where Ø (30445) mm are the diameters of the lead current pipes.
- 1.31 Clamp aluminum pipe – pipe, T-shaped type KA-TT-T Ø30/ Ø30 mm, where Ø (30445) mm are the diameters of the lead current pipes.
- 1.32 Clamp aluminum pipe – pipe cross-shaped type KA-TT-K Ø30/ Ø30, where Ø (30445) mm are the diameters of the lead current pipes.
- 1.33 Clamp aluminum compensating, as $D = (60480)$ mm – diameter of the joint lead current pipe and $S = 500\text{mm}^2$ - section of the flexible lead current connection.

2. Clamps bronze.

- 2.1 Clamp bronze rope – rope straight type КБр-ВВ-П 2xS, where $S = 50\text{mm}^2$ 4 70mm^2 is the section of the ropes.
- 2.2 Clamp bronze rope – rope straight type КБр-ВВ-П 2xS, where $S = 95\text{mm}^2$ 4 120mm^2 is the section of the joined ropes.
- 2.3 Clamp bronze rope – rope straight type КБр-ВВ-П 2xS, where $S = 150\text{mm}^2$ 4 185mm^2 is the section of the joined ropes.

- 2.4 Clamp bronze rope – rope straight type КБр-ВВ-П 600/150 mm², where $S = 150\text{mm}^2 + 4 \cdot 185\text{mm}^2$ is the section of the joined ropes.
- 2.5 Clamp bronze rope – rope parallel type КБр-ВВ-Ус 2xS, where $S = 120\text{mm}^2 + 4 \cdot 500\text{mm}^2$ is the section of the joined ropes.
- 2.6 Clamp bronze rope – rope T shaped type КБр-ВВ-Т S1/S2, where S1 and S2 = $120\text{mm}^2 + 4 \cdot 150\text{mm}^2$ with sections of the joined ropes.
- 2.7 Clamp bronze rope – rope T shaped type КБр-ВВ-Т 600/150 mm², where S1 = 600 mm², and S2 = 150 mm² are the sections of the joined ropes.
- 2.8 Clamp bronze rope – rope T shaped type КБр-ВВ-Т S1/S2, where S1 and S2 = $120\text{mm}^2 + 4 \cdot 600 \text{mm}^2$ are the sections of the joined ropes.
- 2.9 Clamp bronze rope – two ropes T shaped type КБр-В2В-Т 150mm²/2x150mm², where $S=3 \times 150\text{mm}^2$ is the section of the joined ropes.
- 2.10 Clamp bronze rope – two ropes T shaped type КБр-В2В-Т 150mm²/2x600mm², where S1=150mm² is the section of the deviation rope, as S2=2x 600mm² are the section of the main line ropes.
- 2.11 Clamp bronze plate – rope straight type КБр-ПлВ П S, where $S=95\text{mm}^2 + 4 \cdot 150\text{mm}^2$ is the section of the joint rope.
- 2.12 Clamp bronze plate – rope straight type КБр-ПлВ П S, where $S=150\text{mm}^2 + 4 \cdot 500\text{mm}^2$ is the section of the joint rope.
- 2.13 Clamp bronze plate – two ropes straight type КБр-Пл2В П 2xS, where $S=95\text{mm}^2 + 4 \cdot 120\text{mm}^2$ is the section of the joint ropes.
- 2.14 Clamp bronze plate – two ropes straight type КБр-Пл2В П 2xS, where $S=150\text{mm}^2 + 4 \cdot 600\text{mm}^2$ is the section of the joint ropes.
- 2.15 Clamp bronze plate – two ropes straight type КБр-Пл2В П 2xS, where $S=150\text{mm}^2 + 4 \cdot 600\text{mm}^2$ is the section of the joint ropes.
- 2.16 Clamp bronze plate – three ropes straight type КБр-Пл3В П 3xS, where $S=150\text{mm}^2 + 4 \cdot 600\text{mm}^2$ is the section of the joint ropes.
- 2.17 Clamp bronze plate – rope Г – shaped type КБр-ПлВ Г S, where $S=150\text{mm}^2 + 4 \cdot 500\text{mm}^2$ is the section of the joint rope.
- 2.18 Clamp bronze plate – two ropes Г – shaped type КБр-Пл2В Г 2xS, where $S=150\text{mm}^2 + 4 \cdot 500\text{mm}^2$ is the section of the joint ropes.
- 2.19 Clamp bronze pipe – rope straight type КБр-ТВ П Ø30mm/150 mm², where Ø30mm is the diameter of the lead current pipe, as 150mm² is the section of the joint rope.
- 2.20 Clamp bronze pipe – rope straight type КБр-ТВ П Ø40mm/150 mm², where Ø40mm is the diameter of the lead current pipe, as 150mm² is the section of the joint rope.
- 2.21 Clamp bronze pipe – rope straight type КБр-ТВ П Ø40mm/600 mm², where Ø40mm is the diameter of the lead current pipe, as 600mm² is the section of the joint rope.
- 2.22 Clamp bronze pipe – two ropes straight type КБр-Т2В П Ø40mm/2x150 mm², where Ø40mm is the diameter of the lead current pipe, as 2x150mm² are the sections of the joint ropes.
- 2.23 Clamp bronze pipe – two ropes straight type КБр-Т2В П Ø40mm/2x600 mm², where Ø40mm is the diameter of the lead current pipe, as 2x600mm² are the sections of the joint ropes.
- 2.24 Clamp bronze pipe – two ropes straight type КБр-Т2В П Ø60mm/2x600 mm², where Ø60mm is diameter of the lead current pipe, and 2x600mm² are the sections of the joint ropes.

- 2.25 Clamp bronze pipe – rope T shaped type КБр-ТВ Т Ø30mm/150 mm², where Ø30mm is the diameter of the lead current pipe, and 150mm² is the section of the joint rope.
- 2.26 Clamp bronze pipe – rope T shaped type КБр-ТВ Т Ø40mm/600 mm², where Ø40mm is the diameter of the lead current pipe, and 600mm² is the section of the joint rope.
- 2.27 Clamp bronze pipe – two ropes T shaped type КБр-Т2В Т Ø30mm/2x500 mm², where Ø30mm is the diameter of the lead current pipe, and 2x500mm² are the sections of the joint ropes.
- 2.28 Clamp bronze pipe – two ropes T shaped type КБр-Т2В Т Ø40mm/2x600 mm², where Ø40mm is the diameter of the lead current pipe, and 2x600mm² are the sections of the joint ropes.
- 2.29 Clamp bronze pipe – pipe straight type КБр-ТТ П Ø30mm/Ø30mm, where Ø=(30445) mm are the diameters of the lead current pipes.
- 2.30 Clamp bronze pipe – pipe T shaped type КБр-ТТ Т Ø30mm/Ø30mm, where Ø=(30445)mm are the diameters of the lead current pipes.
- 2.31 Clamp bronze pipe – pipe cross – shaped type КБр-ТТ К Ø30mm/Ø30mm, where Ø=(30445)mm are the diameters of the lead current pipes.
- 2.32 Clamp bronze rod – plate straight type КБр-СтПл–П М12, where М12М22 is the thread of the diameter of the lead current rod.
- 2.33 Clamp bronze rod – plate straight type КБр-СтПл–П М22, where М22М27 is the thread of the diameter of the lead current rod.
- 2.34 Clamp bronze rod – plate Г – shaped type КБр-СтПл–Г М16, where М16М27 is the thread of the diameter of the lead current rod.
- 2.35 Clamp bronze rod – plate Г – shaped type КБр-СтПл–Г М22, where М22М27 is the thread of the diameter of the lead current rod.
- 2.36 Clamp bronze rod – plate straight type КБр-СтПл–П М33, where М33 is the thread of the diameter of the lead current rod.
- 2.37 Clamp bronze rod – plate straight type КБр-СтПл–П М48, where М48 is the thread of the diameter of the lead current rod.
- 2.38 Clamp bronze rod– plate type КБр-СтПл–П М30, where М30 is the thread of the diameter of the lead current rod.
- 2.39 Clamp bronze rod – plate straight type КБр-СтПл–П М36, where М36 is the thread of the diameter of the lead current rod.
- 2.40 Clamp earthing rope – bar type КЗ-ВШ S, where S=50mm² 470mm² is the section of the earthing rope.
- 2.41 Clamp earthing rope – rope cross – shaped type КЗ-ВВ–К S, where S=70mm² 4150mm² are the sections of the earthing ropes.

3. Clamps bimetallic.

- 3.1 Clamp bimetallic – rope – rope straight type КД-ВВ-П 6/50, where S_{Cu} = 6mm², is the section of the joint copper conductor, as S_{Al} = 50mm² is the section of the joint aluminum conductor.
- 3.2 Clamp bimetallic rope – rope straight type КД-ВВ-П 35/50, where S_{Cu} ≤ 35mm², is the section of the joint copper conductor, as S_{Al} ≤ 50mm² is the section of the joint aluminum conductor.
- 3.3 Clamp bimetallic rope – rope straight type КД-ВВ-П 50/70, where S_{Cu} ≤ 50mm² is the section of the joint copper conductor, as S_{Al} ≤ 70mm² is the section of the joint aluminum conductor.

- 3.4 Clamp bimetallic rope – rope straight type КД-ВВ-П 95/150, where $SCu \leq 95\text{mm}^2$, is the section of the joint copper conductor, and $SAI \leq 150\text{mm}^2$ is the section for the joint aluminum conductor.
- 3.5 Clamp bimetallic plate – rope straight type КД-ПлВ-П S, where $S = 95\text{mm}^2$ 4 95mm^2 , is the section of the joint aluminum rope.
- 3.6 Clamp bimetallic plate – rope straight type КД-ПлВ-П S, where $S = 120\text{mm}^2$ 4 500mm^2 , is a section of the joint aluminum rope.
- 3.7 Clamp bimetallic plate – two ropes straight type КД-Пл2В-П $2xS$ where $2xS=2x$ (1204500) mm^2 , are the sections of the aluminum ropes.
- 3.8 Clamp bimetallic plate – rope Γ – shaped, type КД-ПлВ- Γ S, where $S=$ (1204500) mm^2 , is the section of the joint aluminum rope.
- 3.9 Clamp bimetallic plate – two ropes Γ shaped type КД-Пл2В- Γ $2xS$, where $S=2x$ (1204500) mm^2 , are the section of the joint aluminum ropes.
- 3.10 Clamp bimetallic pipe – rope straight type КД-ТВ-П $\emptyset 30/S$, where $\emptyset 30$ is the diameter of the joint copper conductor, as $S=$ (1204500) mm^2 , is the section of the joint aluminum rope.
- 3.11 Clamp bimetallic pipe – rope straight type КД-ТВ-П $\emptyset 40/S$, where $\emptyset 40$ is the diameter of the joint copper conductor, as $S=$ (1204500) mm^2 is the section of the joint aluminum rope.
- 3.12 Clamp bimetallic pipe – two ropes straight type тип КД-Т2В-П $\emptyset 30/2xS$, where $\emptyset 30$ is the diameter of the joint copper conductor, as $2xS=2x$ (1204500) mm^2 are the sections of the joint aluminum ropes.
- 3.13 Clamp bimetallic pipe – two ropes straight type КД-Т2В-П $\emptyset 40/2xS$, where $\emptyset 40$ is the diameter of the joint copper conductor, as $2xS=2x$ (1204500) mm^2 , are the sections of the joint aluminum ropes.
- 3.14 Клема двуметална – тръба – две въжета права тип КД-Т2В-П $\emptyset 60/2x600$ mm^2 , където $\emptyset 60$ е диаметъра на присъединявания меден проводник, а $2x600\text{mm}^2$, са сеченията на присъединяваните алуминиеви въжета.
- 3.15 Clamp bimetallic pipe – rope T-shaped type КД-ТВ-Т $\emptyset 30/S$, where $\emptyset 30$ is the diameter of the joint copper conductor, as $S=$ (1204500) mm^2 is the section of the joint aluminum rope.
- 3.16 Clamp bimetallic pipe – rope T-shaped type КД-ТВ-Т $\emptyset 40/S$, where $\emptyset 40$ is the diameter of the joint copper conductor, as $S=$ (1204500) mm^2 is the section of the joint aluminum rope.
- 3.17 Clamp bimetallic pipe – two ropes T-shaped type КД-Т2В-Т $\emptyset 30/2xS$, where $\emptyset 30$ is the diameter of the joint copper conductor, as $2xS=2x$ (1204500) mm^2 are the sections of the aluminum ropes.
- 3.18 Clamp bimetallic pipe –two ropes T-shaped type КД-Т2В-Т $\emptyset 40/2xS$, where $\emptyset 40$ is the diameter of the joint copper conductor, as $2xS=2x$ (1204500) mm^2 are the sections of the joint aluminum ropes.
- 3.19 Clamp bimetallic pipe – rope Γ -shaped type КД-ТВ- Γ \emptyset/S , where $\emptyset=$ (30442) mm is the diameter of the joint copper pipe, as $S=$ (1204500) mm^2 , is the section of the joint aluminum rope.
- 3.20 Clamp bimetallic rod – rope type КД-СтВ- M12/S, where M12 is the thread of the diameter of the lead current rod, as $S=$ (50470) mm^2 , is the section of the joint aluminum rope.
- 3.21 Clamp bimetallic rod – rope type КД-СтВ- M/S, where M124M22 is the thread of the diameter of the lead current rod, as $S=$ (954150) mm^2 , is the section of the joint aluminum rope.

- 3.22 Clamp bimetallic rod – rope type КД-СТВ- M/S, where M124M27 is the thread of the diameter of the lead current rod, as $S = (1854500) \text{ mm}^2$, is the section of the joint aluminum rope.

In addition to the above mentioned types of bimetallic clamps, as such the following could also be used:

- aluminum clamps type “plate – rope”, “plate – two ropes”, pipe – rope”, “pipe – two ropes”, and “pipe – pipe” – positions №№ 1.12÷ 1.32 and

- all aluminum pressed clamps type: “plate – rope”, “plate – two roped”, “pipe – rope” and “pipe – two ropes” – positions №№ 4.1÷ I4.12,

equipped with aluminum plates with copper coating and dimensions of the plate and pipe.

4. Clamps pressed.

- 4.1 Clamp aluminum pressed – plate rope – straight type КАПр-ПлВ-П-Пл $A \times B / S$, where A and B are the length and width of the plate, as $S = (120 \div 600) \text{ mm}^2$, is the section of the joint aluminum rope.
- 4.2 Clamps aluminum pressed – plate rope, Γ – shaped type КАПр-ПлВ- Γ -Пл $A \times B / S$, where A and B are the length and width of the plate, as $S = (120 \div 600) \text{ mm}^2$, is the section of the joint aluminum rope.
- 4.3 Clamp aluminum pressed plate – rope – T-shaped type КАПр-ПлВ-T-Пл $A \times B / S$, where A and B are the length and width of the plate, as $S = (120 \div 600) \text{ mm}^2$ is the section of the joint aluminum rope.
- 4.4 Clamp aluminum pressed plate – two roped straight type КАПр-Пл2В-П-Пл $A \times B / 2 \times S$, where A and B are the length and width of the plate and $2 \times S = (120 \div 600) \text{ mm}^2$, are the sections of the joint aluminum ropes.
- 4.5 Clamp aluminum pressed plate – two ropes Γ -shaped type КАПр-Пл2В- Γ -Пл $A \times B / 2 \times S$, where A and B are the length and width of the plate and $2 \times S = (120 \div 600) \text{ mm}^2$, are the sections of the joint aluminum ropes.
- 4.6 Clamp aluminum pressed plate – two ropes, T-shaped type КАПр-Пл2В-T-Пл $A \times B / 2 \times S$, where A and B are the length and width of the plate as $2 \times S = (120 \div 600) \text{ mm}^2$, are the sections of the joint aluminum ropes.
- 4.7 Clamp aluminum pressed pipe – rope straight type КАПр-ТВ-П- \emptyset / S , where $\emptyset = (20 \div 80) \text{ mm}$ is the diameter of the pipe (rod) and $S = (120 \div 600) \text{ mm}^2$ is the section of the joint aluminum rope.
- 4.8 Clamp aluminum pressed pipe – rope Γ – shaped type КАПр-ТВ- Γ - \emptyset / S , where $\emptyset = (20 \div 80) \text{ mm}$ is the diameter of the pipe (rod), and $S = (120 \div 600) \text{ mm}^2$ is the section of the joint aluminum rope.
- 4.9 Clamp aluminum pressed pipe – rope, T-shaped type КАПр-ТВ-T- \emptyset / S , where $\emptyset = (20 \div 80) \text{ mm}$ is the diameter of the pipe (rod), and $S = (120 \div 600) \text{ mm}^2$ is the section of the joint aluminum rope.
- 4.10 Clamp aluminum pressed pipe – two ropes straight type КАПр-T2В-П- $\emptyset / 2 \times S$, where $\emptyset = (20 \div 80) \text{ mm}$ is the diameter of the pipe (rod), and $2 \times S = (120 \div 600) \text{ mm}^2$, are the sections of the joint aluminum rope.

- 4.11 Clamp aluminum pressed pipe – two roped, Γ – shaped type КАПp-T2B- Γ - $\varnothing/2xS$, where $\varnothing = (20\div 80)$ mm is the diameter of the pipe (rod), and $2xS = (120\div 600)$ mm² are the sections of the joint aluminum ropes.
- 4.12 Clamp aluminum pressed pipe – two roped, T – shaped type КАПp-T2B-T- $\varnothing/2xS$, where $\varnothing = (20\div 80)$ mm is the diameter of the pipe (rod) and $2xS = (120\div 600)$ mm² are the sections of the joint aluminum ropes.
- 4.13 Clamp aluminum pressed rope – rope, “Г“ („T“) shaped (deviating) type КАПp-BB- Γ (T)- SxS , where $S = (120\div 600)$ mm², are the sections of the joint aluminum ropes.

SPECIFICATION

EARTHING SYSTEMS AND INSULATION BEAMS

1. Earthing systems

1.1. Earthing system temporary portable for round section.

One phase - 3BII-K1

Three phase - 3BII-K3

Five phase - 3BII-K5

1.2. Earthing system temporary portable for bar

One phase - 3BII-II1

Three phase - 3BII-II3

Five phase - 3BII-II5

Note: The lengths and square surface of the phase and earthing ropes are specified in Purchase order.

2. Insulation beams

2.1 Insulation beam up to 20 kV.

2.2 Insulation beam up to 110 kV.