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B-1-4-M

Standard Specifications for Electrical Components and Materials

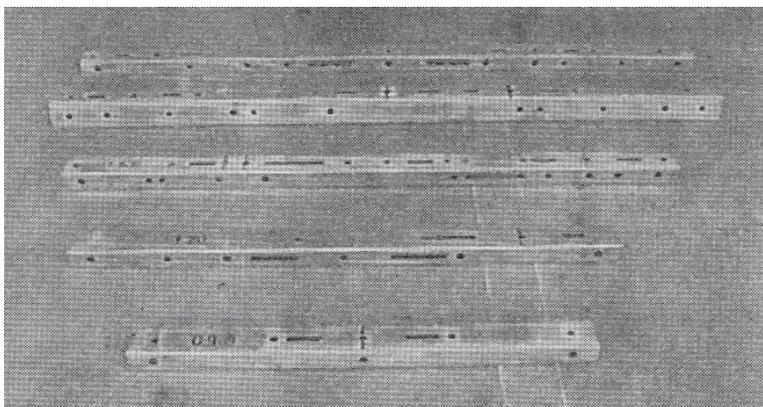
Tepeco Power Grid, Incorporated
Established in July 1959

Revised in December 2000

Revised in June 2001

(Functional standardization)

6D-33 LIGHT CROSS ARMS



1. General provisions

1.1 Scope

This product is used on wood, concrete and coupled poles, as support materials for overhead distribution lines.

1.2 Types

The products are categorized into 6 types based on the length and applied installation method.

Table 1

Type	Applied installation method
1.8 KAKUTE	Mainly used as cross arms for high-voltage 3-wire straight-pull assembly, two-side anchor assembly (breakaway), high-voltage 3-wire total-breakaway assembly and transformer platform assembly (double assembly).
1.8 MARUHI	Mainly used as cross arms for anchor assembly (core attaching, breakaway) and oil switch mounting assembly.
1.5 KAKUTE	Mainly used as cross arms for high-voltage 3-wire straight-pull assembly, total-breakaway assembly, two-side anchor assembly (breakaway), or transformer platform assembly (single assembly).
1.5 MARUHI	Mainly used as cross arms for anchor assembly and cable head mounting assembly.
1.2 TO	Mainly used as cross arms for high-voltage line pull-down assembly and low-voltage breakaway assembly.
0.9 TE	Used as cross arms for low-voltage 2-wire straight-pull assembly and anchor assembly.

1.3 Indication

Indicate the abbreviated name of manufacturer and the last 2 digits of manufacturing year in the western calendar at an easily viewable place of the product in such a manner that it is not easily removable.

1.4 Related standards

JIS G 3101 (1995) Rolled steels for general structure

JIS H 8641 (1999) Hot dip galvanized coatings

JIS H 0401 (1999) Test methods for hot dip galvanized coatings

- TEPCO related standard - Standard Specifications for Electrical Materials and Equipment 6E-36 U bolts

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2. Structure and materials

2.1 General matters

This product shall be structured so that it can be attached using "6E-36 U bolts" in TEPCO specifications, without impairing the performance of insulators and hardware related to the assembly. For □-shaped and ▤-shaped cross arms, a bird prevention plate to prevent entering of sparrows shall be provided at the end face of the cross arm in such a manner that it is not easily detachable. ▤-shaped ▤ross arms shall be provided with a reinforcing plate with dimensions that do not interfere with the assembly and a sufficient strength, as shown in the attached figure. There shall be no scratch, crack, rust, poor weld or any other flaw.

2.2 Shape and dimensions

The shape and dimensions of the product shall be in accordance with the attached figures. The tolerances shall be in accordance with Table 3.

2.3 Provisions on principal structural part

(1) Material

For the material, use a steel material specified in JIS that satisfies the functional characteristics of the product. The joint surface of □-shaped and ▤-shaped cross arms shall be smooth and have a sufficient strength.

[Note]

The "steel material specified in JIS that satisfies the functional characteristics of the product" includes, based on the conventional knowledge, SS400 specified in JIS G 3101 (Rolled steels for general structure).

(2) Surface treatment

Apply hot dip galvanized coating specified in JIS H 8641 (Hot dip galvanizing coatings) over the entire surface, except when using a steel material having an anticorrosion property equal to or higher than hot dip galvanized coating.

3. Type test

3.1 General matters

These tests are conducted to examine the quality of completed products. The tests below shall be conducted for 3 test pieces of the same type. The test pieces shall pass all the tests.

3.2 Test items, test methods and decision criteria

(1) Appearance inspection

Conduct an inspection by visual examination or touch to check whether there is any fault that is inadequate from a practical perspective. There shall be no inadequateness. Poor coating shall be judged based on the technical documents submitted by the manufacturer that specifies the quality.

(2) Shape/dimensional inspection

Measure the dimensions using a caliper or scale. The measured values shall conform to this specification document and the principal dimensions in the technical document submitted by the manufacturer that specifies the quality.

(3) Load test

Conduct a bend test of completed products in the condition described in Figure 1. Apply the load specified in Table 2 and wait for 3 minutes. The condition shall be as specified in Table 2. The load application tool used in the test shall have a radius of 25 mm and a width of 75 mm or more.

Table 2

Type	Specified load	Condition after 3 minutes
1.8 MARUHI 1.5 MARUHI	14700N [1500 kgf]	No rupture, crack or any other defects. The deflection at the center shall be 5 mm or less.
1.8 KAKUTE 1.5 KAKUTE	7350N [750 kgf]	No rupture, crack or any other defects. The deflection at the center shall be 8mm or less.
1.2 TO 0.9 TE	4900N [500 kgf]	No rupture, crack or any other defects. The deflection at the center shall be 8mm or less.

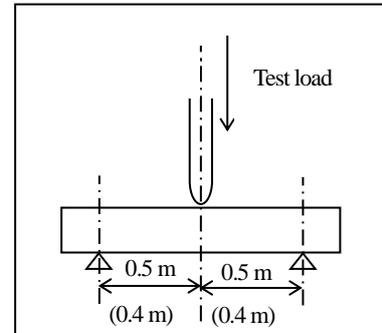


Figure 1:
The dimensions in the parentheses indicate the values for 0.9 TE cross arms.

(4) Hot dip galvanized coating test

Measure the mass in accordance with 3. "Methods of coating mass test" in JIS H 0401 (Test methods for hot dip galvanized coatings) or by the coating thickness test method (average of values at any given 5 places) specified in the reference material of the same JIS. The measured values shall be 350 g/m² or more. For the specimen of the coating mass test, appropriate test pieces may be created in advance. The test pieces shall be coated in the same procedure of the same manufacturing process as the product.

4. Supplementary items

4.1 General matters

For type approval inspection, TEPCO shall be entitled to request for submission of samples when TEPCO find it necessary.

4.2 Submission of in-house inspection result report

Each time the supplier delivers their products, the supplier shall submit an in-house inspection result report to TEPCO.

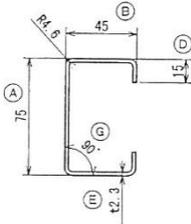
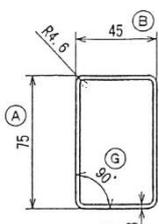
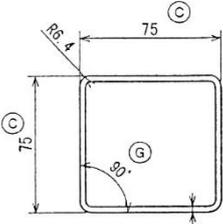
The test items, sampling rate and report form shall be determined separately through consultation.

Table 3: Dimensional tolerances

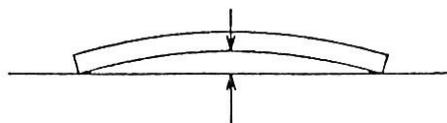
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(Unit: mm)

Positions of cross-sectional positions			
	Dimensional position	Tolerance	
A	+/-1.5 mm		
B	+/-1.5 mm		
C	+/-1.5 mm		
D	+/-1.5 mm		
E	+/-0.23 mm		
F	+/-0.32 mm		
G	+/-1.5° (For [] -shaped type, it shall be within the range causing no practical harm.)		
Total length	+/-0.5%		
Hole diameter	Round hole: +0.5 mm, -0 mm Long hole: +4.0 mm, -0 mm		
Hole interval	100 mm or less: +/-2% More than 100 mm: +/-1%		
Vertical and horizontal deflection from the hole center	+/-1.5 mm		
Between the center of end hole and an end	+/-10 mm		
Other	+/-2%		
Angular distortion	10 mm or less		

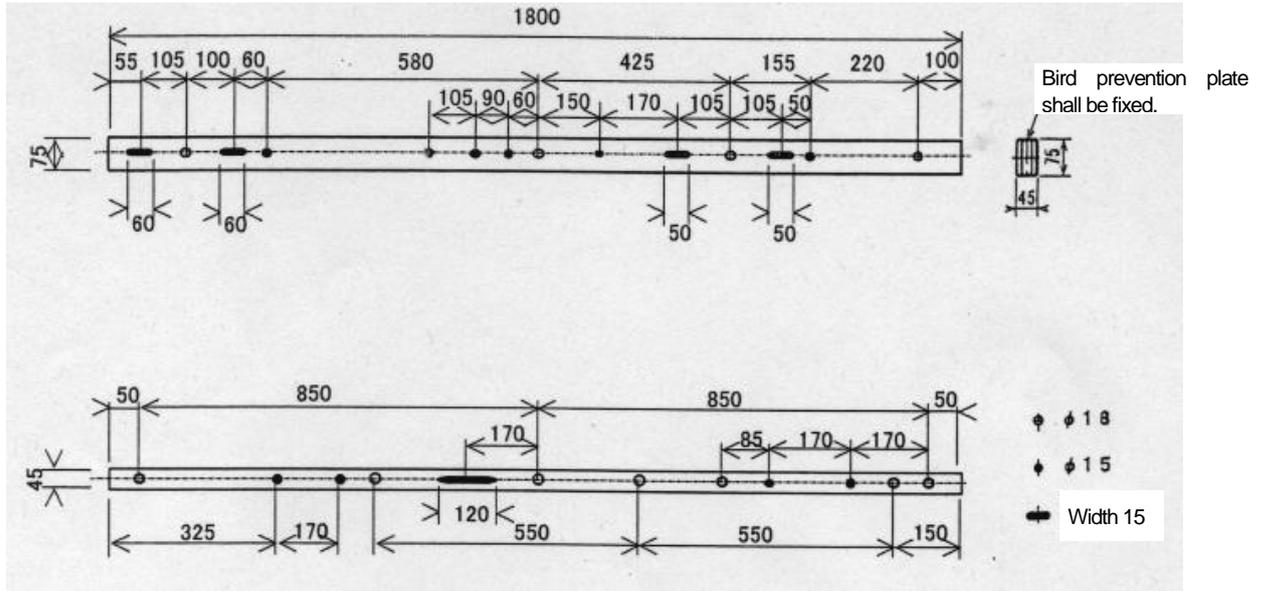
(Note) Angular distortion shall be identified by measuring the longitudinal curvature in the surface that is parallel to the flat plate part, as shown in the figure below.



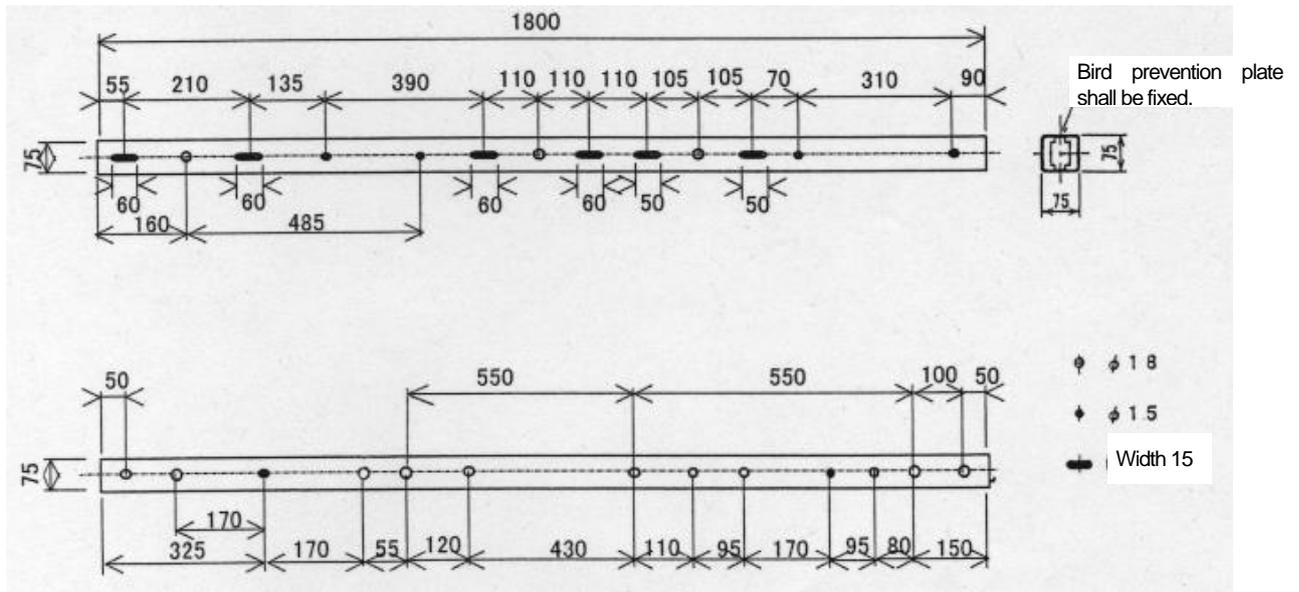
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Attached figure 1: 1.8 KAKUTE

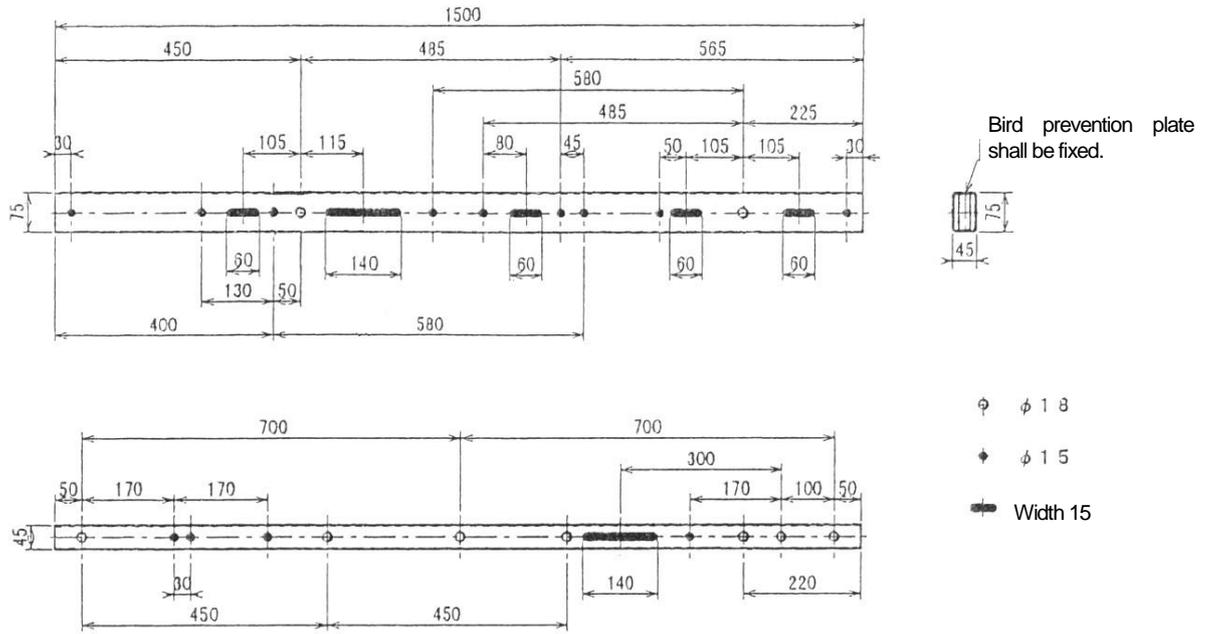


Attached figure 2: 1.8 MARUHI

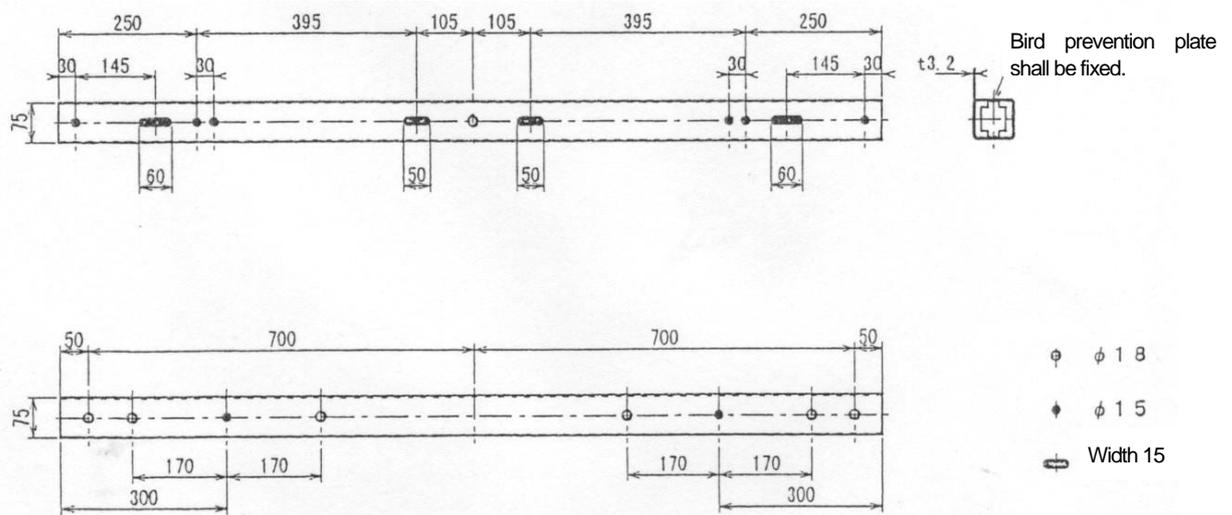
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(Unit: mm)



Attached figure 3: 1.5 KAKUTE

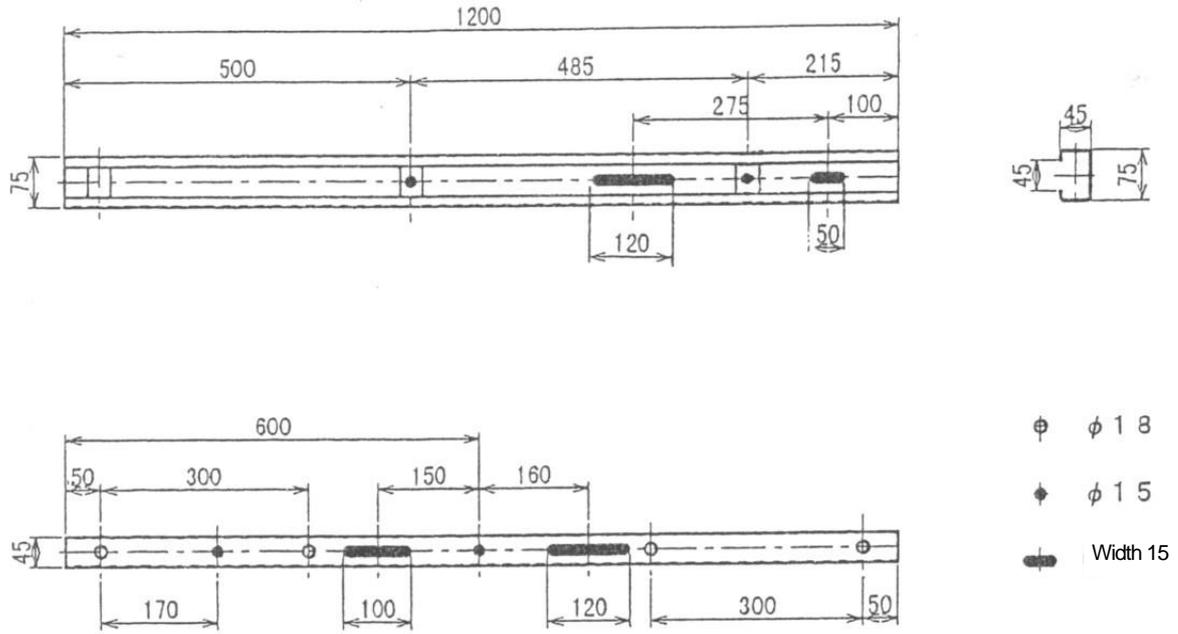


Attached figure 4: 1.5 MARUHI

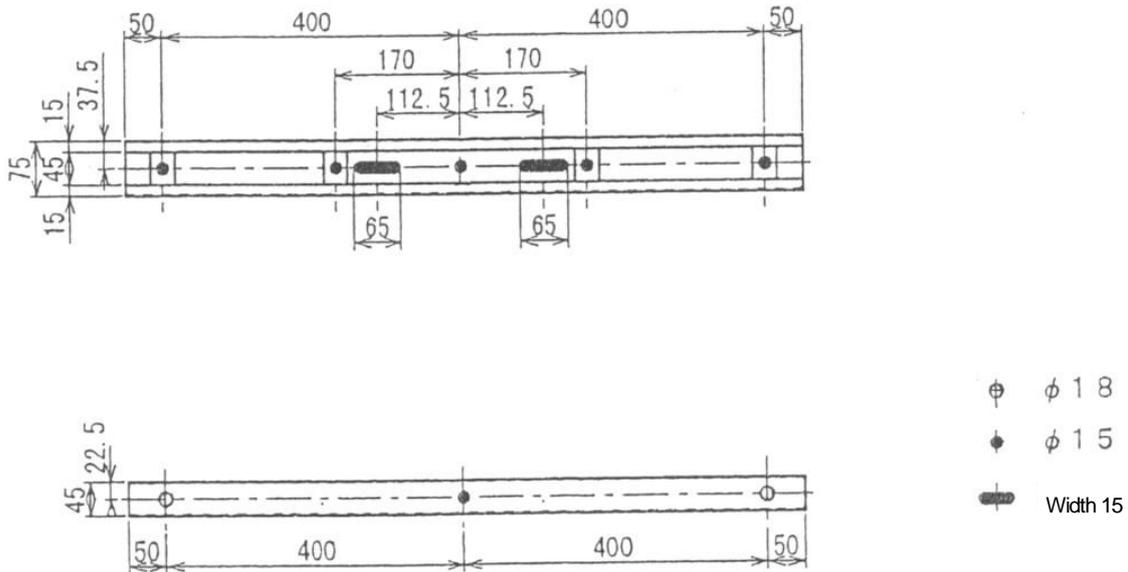
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Attached figure 5: 1.2 TO



Attached figure 6: 0.9 TE

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