

JIS

JAPANESE INDUSTRIAL STANDARD

Compression Terminals

JIS C 2804 — 1984

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Compression Terminals

C 2804-1984

1. Scope

This Japanese Industrial Standard specifies compression terminals so constructed that wires and terminals are compressed and connected by use of special tools for the connection between the electric appliance terminals and wires, hereinafter referred to as the "terminals".

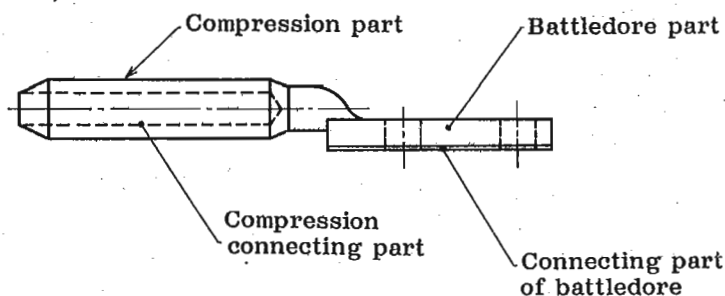
Remark: The units and numerical values given in { } in this standard are in accordance with the International System of Units (SI), and are appended for reference.

2. Definition

The main terms used in this standard mean as follows:

- (1) battledore part The platy part of the terminal to be connected with the connecting face of the appliance terminal.
- (2) compressing part The cylindrical part of the terminal for compressing and connecting the inserted wire.
- (3) battledore connecting part The connecting face of the battledore part to be connected with the appliance terminal.
- (4) compression connecting part The cylindrical part of the compression part into which the wire is inserted.

Fig. 1. Designation of Respective Parts of Terminal



- (5) antifreezing construction A construction provided for preventing the cracking of the terminal or other trouble caused by the freezing of water which penetrates into the compression part.

3. Classification and Dimensions

The classification and dimensions of terminals shall be as shown in Table 1.

Table 1

Type	Symbol	Dimensions	Material	Remark
Terminals for hard-drawn copper stranded wires	C	Attached Table 1	Copper is used as the material of terminal.	—
Terminals for hard-drawn aluminium stranded wires	A	Attached Table 2	Aluminium is used as the material of terminal and copper plate is bonded on the connecting part of battledore part.	To be anti-freezing construction
	AA	Attached Table 3	Aluminium is used as the material of terminal.	
Terminals for steel-reinforced aluminium stranded wires	S	Attached Table 4	Aluminium is used as the material of terminal and copper plate is bonded on the connecting part of battledore part.	
	SA	Attached Table 5	Aluminium is used as the material of terminal.	

4. Performance

4.1 Appearance Terminals shall be free from defects harmful to use, such as flaws, rust, fissures, cracks, or remarkable unevenness in wall thickness.

4.2 Plating Tin-plated parts shall meet the performance requirements of the following (1) and (2):

- (1) When the test of 6.4 (1) is performed, black copper sulfide shall not be caused and the plating shall not be peeled off.

- (2) When the test of 6.4 (2) is performed, there shall not occur the exposure of the substrate, green copper rust, pinholes, or other defects recognized to be harmful to use.

4.3 Bonding Performance When the test of 6.5 is performed on the copper plate-bonded surface of Type A and Type S terminals, the copper plate and the aluminium shall maintain secure bonding with each other.

4.4 Compression Connection Performance When the test of compression connection test of 6.6 is performed, there shall not occur any trouble harmful to use, such as fissures or cracks and the terminal and the wire shall maintain adequate close contact with each other.

In addition, the width across flats after the compression shall be within the tolerance on dimension D_c specified in Attached Tables 1 to 5.

4.5 Electric Resistance When the electric resistance test of 6.7 is performed, the electric resistance measured shall not exceed 100 % of the electric resistance of the wire.

4.6 Temperature Rise When the temperature test of 6.8 is performed, the temperature rise in the battledore part of the terminal shall be not more than 45°C and the temperature rise in the compression part shall not exceed the value of temperature rise of the wire.

4.7 Tensile Load When the tensile load test of 6.9 is performed, there shall not occur any trouble harmful to use, such as slipping, dropping out of wire, or deformation in the compression connecting part of the terminal.

4.8 Copper Plate Peeling Strength When the copper plate peeling test of 6.10 is performed, the copper plate of the battledore part of the terminal shall not be peeled off.

4.9 Antifreezing Performance When the freezing test of 6.11 is performed, there shall not occur cracking, expansion, or other defects due to the freezing of water penetrating into the conical space at the deepest part of the compression connecting part of the terminal.

5. Material and Processing Method

5.1 Materials The materials of terminals shall be as follows:

- (1) The material of terminals for hard-drawn copper stranded wires shall conform to JIS H 2122 or JIS H 2123.

- (2) The material of terminals for hard-drawn aluminium stranded wires and terminals for steel-reinforced aluminium stranded wires shall conform to JIS H 2110, and the material of the copper plate specified in 5.2 shall conform to C 1100 P specified in JIS H 3100.

5.2 Processing Methods Terminals shall be produced by casting, die forging, or other production methods, and the battledore connecting part of Type A and Type S terminals shall be bonded with copper plate by brazing or other methods.

5.3 Treatment of Connecting Face The connecting face shall be treated as follows:

- (1) The battledore connecting part of Type C, Type A, and Type S terminals shall be plated with tin as a rule. However, where otherwise specified, other kinds of plating may be applied. In such cases, the kind of plating, test method, and temperature rise value specified in 4.6 shall be decided on agreement between the parties concerned.
- (2) The battledore connecting part of Type AA and Type SA terminals shall not be plated as a rule. However, where otherwise specified, surface treatment may be applied by plating or other methods. In such cases, the kind of surface treatment, test method, and temperature rise value specified in 4.6 shall be decided on agreement between the parties concerned.

5.4 Antifreezing Construction Type A, Type AA, Type S, and Type SA terminals shall be provided with an antifreezing construction by use of a sealing compound or by other means.

6. Test Methods

6.1 Test Conditions The test conditions shall be as follows:

- (1) Unless otherwise specified, tests shall be performed in a room at ordinary temperature ($20 \pm 15^\circ\text{C}$) and ordinary humidity ($65 \pm 20\%$) as specified in JIS Z 8703.
- (2) The specimens used for the test of 6.2, 6.3, 6.4, 6.5, and 6.10 shall be simple terminal bodies, and those used for the tests of 6.6, 6.7, 6.8, 6.9, and 6.11 shall be terminals which have been compression-connected with sufficiently ground clean wires as specified in Table 3 by use of a suitable tool complying with the dimensions of the terminals.

In addition, in the tests of 6.7 and 6.8, mild steel bolts shall be used for the connection between terminals, and in the case of Type AA and Type SA terminals, the specimens used shall be terminals connected as shown in Fig. 2 and Fig. 3 by tightening under the torque specified in Table 2 with a standard torque wrench or by other tightening methods, with an antioxidation compound interposed between the terminals.

Table 2

Designation of bolt	Torque kgf·cm {N·m}
M 12	320 to 400 {31.4 to 39.2}
M 16	800 to 1 000 {78.5 to 98.1}

Table 3. Terminals for Hard-Drawn Copper Stranded Wires (Type C)

Designation	Nominal cross-sectional area of wire ⁽¹⁾ mm ²	Temperature test current A	Tensile load kgf {kN}
1- 22	22	160	270 { 2.65 }
1- 38	38	225	450 { 4.41 }
2- 55	55	290	660 { 6.47 }
1- 60 2- 60	60	300	730 { 7.16 }
2- 75	75	350	880 { 8.63 }
2- 100	100	420	1 210 { 11.9 }
2- 125	125	490	1 500 { 14.7 }
2- 150	150	550	1 850 { 18.1 }
2- 180	180	620	2 140 { 21.0 }
2- 200	200	660	2 380 { 23.3 }
2- 240	240	730	2 760 { 27.1 }
2- 250	250	760	3 100 { 30.4 }
4- 325	325	890	3 900 { 38.2 }
4- 400	400	1 030	4 800 { 47.1 }
4- 500	500	1 140	5 800 { 56.9 }
6- 600	600	1 260	7 200 { 70.6 }
6- 725	725	1 410	8 700 { 85.3 }
6- 850	850	1 540	10 000 { 98.1 }
6-1000	1 000	1 680	12 100 {119 }

Note ⁽¹⁾ The wires shall conform to JIS C 3105.

Table 3 (Continued). Terminals for Hard-Drawn Aluminium Stranded Wires (Type A and Type AA)

Designation	Nominal cross-sectional area of wire ⁽²⁾ mm ²	Temperature test current A	Tensile load kgf {kN}	Copper plate peeling torque kgf·m {N·m}
2- 55	55	230	260 { 2.55 }	7 { 68.6 }
2- 95	95	330	430 { 4.22 }	7 { 68.6 }
2- 150	150	430	690 { 6.77 }	10 { 98.1 }
2- 200	200	520	920 { 9.02 }	12 { 118 }
2- 240	240	570	1 050 { 10.3 }	12 { 118 }
4- 300	300	660	1 350 { 13.2 }	18 { 177 }
4- 400	400	790	1 800 { 17.7 }	18 { 177 }
6- 510	510	920	2 250 { 22.1 }	22 { 216 }
6- 660	660	1 080	3 000 { 29.4 }	25 { 245 }
6- 850	850	1 260	3 700 { 36.3 }	30 { 294 }
6- 980	980	1 380	4 400 { 43.1 }	35 { 343 }
6-1260	1 260	1 590	5 600 { 54.9 }	40 { 392 }

Note ⁽²⁾ The wires shall conform to JIS C 3109.

Table 3 (Continued). Terminals for Steel-Reinforced Aluminium Stranded Wires (Type S and Type SA)

Designation	Nominal cross-sectional area of wire ⁽³⁾ mm ²	Temperature test current A	Tensile load kgf {kN}	Copper plate peeling torque kgf·m {N·m}
2- 58	58	240	600 { 5.88 }	7 { 68.6 }
2- 95	95	325	960 { 9.41 }	7 { 68.6 }
2-120	120	390	1 700 { 16.7 }	10 { 98.1 }
2-160	160	460	2 100 { 20.6 }	10 { 98.1 }
2-200	200	530	2 600 { 25.5 }	12 { 118 }
4-240	240	600	3 100 { 30.4 }	18 { 177 }
4-330	330	720	3 300 { 32.4 }	18 { 177 }
4-410	410	850	4 200 { 41.2 }	18 { 177 }
6-610	610	1 070	5 500 { 53.9 }	25 { 245 }

Note ⁽³⁾ The wires shall conform to JIS C 3110.