



QUALIFICATION TEST REPORT

AMPACT[®] Aluminum Taps
Manufactured by
AMP do Brasil

501-253 Rev. 0

Product Specification: 108-13011
CTL No.: CTLX0176-001
Date: 9/22/94
Classification: Unrestricted
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CONTROLLED DOCUMENT
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Corporate Test Laboratory Harrisburg, Pennsylvania

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(RCTLX0176-001)



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Qualification Test Report

1. Introduction

1.1 Purpose

Testing was performed on AMPACT Taps manufactured by AMP do Brasil to determine their conformance to the requirements of AMP Product Specification 108-13011, Rev. 0.

1.2 Scope

This report covers testing of the electrical, mechanical, and environmental performance of the AMPACT Tap part numbers and wire combinations listed below. The testing was performed between August 1993 and May 1994.

<u>Part Number</u>	<u>Wire Combination</u>
602007	400 MCM Copper x 397.5 MCM Aluminum (AAC)
602380-7	350 MCM Copper x 350 MCM Aluminum (AAC)
600466	4/0 AWG Copper(STR) x 4/0 AWG Aluminum (STR-AAC)
600525	#2 AWG Copper(STR) x 1/0 AWG Aluminum(STR-AAC)

1.3 Conclusion

The AMPACT Tap part numbers listed above, assembled with the wire combinations shown, meet the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-13011 Rev. 0.

1.4 Product Description

AMPACT aluminum taps consist of a spring "C" member and a wedge made of a special aluminum alloy. They are intended to provide a reliable electrical and mechanical connection for solid, stranded, or compressed conductor combinations. AMPACT Taps are installed using a specially designed application tool which employs a fast burning propellant to apply the wedge into the "C" member.

1.5 Test Samples

The test samples were randomly selected from normal current production lots, and the following part numbers, assembled to the wire types, sizes, and combinations listed, were used for testing:

<u>Group</u>	<u>Quantity</u>	<u>Part Number</u>	<u>Wire Combination</u>
I	4	602007	400 MCM Copper x 397.5 MCM Aluminum
	4	602380-7	350 MCM Copper x 350 MCM Aluminum
	4	600466	4/0 AWG Copper x 4/0 AWG Aluminum
	4	600525	#2 AWG Copper x 1/0 AWG Aluminum
II	4	602007	400 MCM Copper x 397.5 MCM Aluminum
	4	602380-7	350 MCM Copper x 350 MCM Aluminum
	4	600466	4/0 AWG Copper x 4/0 AWG Aluminum
	4	600525	#2 AWG Copper x 1/0 AWG Aluminum

(All wire types are stranded)

1.6 Qualification Test Sequence

Test or Examination	Test Groups	
	I	II
Examination of Product	1	1
Termination Resistance	2-4 *	2-4-6
Heat Cycle	3	
Thermal Shock		3
Corrosion		5
Tensile Strength	5	

The numbers indicate sequence in which tests were performed.

* - Measurements taken throughout the test as specified.

2. Summary of Testing

2.1 Examination of Product - All Groups

All samples submitted for testing were selected from normal current production lots. They were inspected and accepted by the Product Assurance Department of AMP do Brasil.

2.2 Termination Resistance - Groups I & II

Group I - Heat Cycle Test

Voltage drop measurements were taken at the specified intervals during the heat cycle test, converted to termination resistance, and normalized to 20°C. These measurements indicated that the resistances of the connections were stable throughout the test from the 25th cycle to the 500th cycle. No resistance measurement varied by more than $\pm 5\%$ from the average of the measured values in the test interval.

Group II - Thermal Shock and Corrosion

The voltage drop measurements across each tap connection in the test group did not deviate by more than 250% from the initial measurements to measurements taken after exposure to either Thermal Shock or Corrosion tests.

2.3 Heat Cycle Test - Temperature Stability

Throughout the Heat Cycle test, the temperature of the tap connections, as required, did not exceed the temperature of the control conductor. The temperature difference between the control conductor and each connector met the requirement for stability from the 25th cycle to the 500th cycle of testing. Stability is achieved when none of the temperature differences between the control conductor and the connector is more than 10°C below the average of all temperature differences for that connector over the test interval.

2.4 Thermal Shock - Group II

After five cycles of Thermal Shock as specified, all taps met the requirements for termination resistance (see section 2.2).

2.5 Corrosion - Group II

After completion of the 30-day Salt Spray corrosion test as specified, all taps met the requirements for termination resistance (see section 2.2).

2.6 Tensile Strength - Group I

When tested for Tensile Strength as specified, all samples met the requirement of attaining a tensile force of 200 pounds or 5% of the rated conductor strength of the weaker conductor, whichever is larger, for conductors larger than #6.

3. Test Methods

3.1 Examination of Product

Test samples were visually inspected before and after assembly to assure proper manufacturing and assembly in accordance with the drawings and instructions.

3.2 Termination Resistance

Termination resistance (voltage drop) measurements were taken at a specified current of 50 amperes DC for samples using tap part numbers 602007, 602380-7, and 600466. For samples using taps with part number 600525, a current of 20 amperes DC was used, to avoid appreciable heating due to the smaller wire sizes. The readings were made using a four terminal measuring technique.

3.3 Heat Cycle Test

Test samples were subjected to a heat cycle(current cycling) test in accordance with the ANSI C119.4-1991 specification for Class A electrical connectors. The testing consisted of 500 cycles, the duration of which was dependent on the sample conductor size. Samples prepared with tap part numbers 602007 and 602380-7 were exposed to cycles having a 1 ½ hour current-on time, and a 1 ½ hour current-off time for a total cycle time of 3 hours. Samples prepared with tap part numbers 600466 and 600525 were exposed to cycles having a 1 hour current-on time and a 1 hour current-off time for a total cycle time of 2 hours. Current was adjusted during the first 25 cycles to obtain a 100°C temperature rise in the control conductor. Resistance and temperature measurements were taken at the following intervals: 25, 50, 75, 100, 125, 165, 205, 250, 325, 405, and 500 cycles. Temperature measurements were taken at the end of the current-on period, while resistance measurements were taken at the end of the current-off period.

3.4 Thermal Shock

Test samples were subjected to five cycles of Thermal Shock, in accordance with AMP Specification 109-13009. Samples were configured as shown in Figure 2 of the test specification. Each cycle consisted of the following:

- 2 ½ hours @ 150°C
- ¼ hour @ 0°C (melting ice water)
- ½ hour @ 150°C
- 20 ¾ hours @ room temperature

3.5 Corrosion, Salt Spray

Test samples were subjected to a 30 day Salt Spray Corrosion test in accordance with AMP Specification 109-13010, each daily exposure consisting of:

- 15 hours in a 5% salt spray atmosphere
- 1 hour in a drying oven @ 100°C
- 8 hours @ room temperature

3.6 Tensile Strength

Test samples were placed in a tensile testing machine and an axial force applied to the conductors at a rate of ¼ inch per minute per foot of length between the machine jaws. Force was applied until the taps broke or became separated from the conductors.

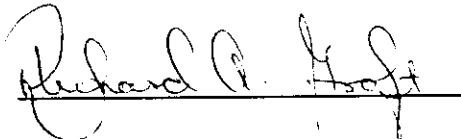
4. Validation

Prepared by:

 9/22/94

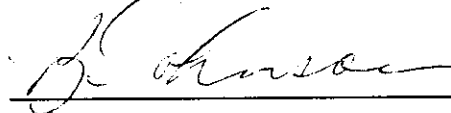
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