

**PRODUCT SPECIFICATION**

**1. SCOPE**

**1.1. Content**

This specification covers performance, tests and quality requirements for AMPPOWER\* Wave Crimp wire tap connector with .250 FASTON\* tab. The tap is applied anywhere along the length of 1 inch wide insulated single or dual conductor flat copper cable having conductor thickness of .010 or .020. It provides 2 electrically independent NEMA/UL standard .250 tabs in an insulated housing.

**1.2. Qualification**

When tests are performed on subject product line, procedures specified in AMP 109 series specifications shall be used. All inspections shall be performed using applicable inspection plan and product drawing.

**2. APPLICABLE DOCUMENTS**

The following documents constitute a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and product drawing, product drawing shall take precedence. In the event of conflict between requirements of this specification and referenced documents, this specification shall take precedence.

**2.1. AMP Documents**

- A. 109-1: General Requirements For Test Specifications
- B. 109 Series: Test Specifications as indicated in Figure 1. (Comply with MIL-STD-202, MIL-STD-1344 and EIA RS-364)
- C. Corporate Bulletin 401-76: Cross reference between AMP Test Specifications and Military or Commercial Documents
- D. 108-1285: Receptacle, FASTON, Fully Insulated, Ultra-Pod
- E. 114-2124: Ultra-Pod Fully Insulated Receptacles
- F. 114-49005: AMPPOWER Wave Crimp System
- G. 501-199: Test Report

\* Trademark

Product Code: 9983

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<b>CONTROLLED DOCUMENT</b> This specification is a controlled document per AMP Specification 102-21. It is subject to change and Corporate Standards should be contacted for latest revision.				DR B. Beckley 11/19/92		<b>AMP</b> AMP Incorporated Harrisburg, PA 17105-3608		
				CHK J. Jameel 11/23/92				
				APP G. Bennett 11/24/92		NO 108-1387	REV A	LOC B
A	Revised per EC 93031202	<i>BLB</i>	<i>3/17/93</i>	PAGE	TITLE			
LTR	REVISION RECORD	APP	DATE	1 OF 10	CONNECTOR, AMPPOWER WAVE CRIMP WIRE TAP WITH .250 FASTON TAB			

2.2. Other Standards

A. Commercial

- (1) NEMA DC-2 Standard for quick connect terminals
- (2) UL-310 Specification for quick connect terminals

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of design, construction and physical dimensions specified on applicable product drawing.

3.2. Materials

- A. Contact: Copper alloy, silver plated
- B. Housing: PBT polyester, black, glass filled, UL9V-0

3.3. Ratings

- A. Voltage: 250 vac (rms)
- B. Current: See Figure 2 for applicable current carrying capability
- C. Temperature:
  - (1) -40 to 105°C, intermittent use
  - (2) -40 to 90°C, continuous use

3.4. Performance and Test Description

Product is designed to meet electrical, mechanical and environmental performance requirements specified in Figure 1. All tests performed at ambient environmental conditions per AMP Specification 109-1 unless otherwise specified.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing and AMP Spec 114-2124 and 114-49005.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Termination resistance, dry circuit.	1 milliohm maximum initial. 2 milliohm maximum final for each circuit.	Subject each wire tap circuit to 50 millivolts open circuit voltage at 100 ma maximum. See Figure 4. AMP Spec 109-6-1.

Figure 1 (cont)

Test Description	Requirement	Procedure
Dielectric withstanding voltage.	1500 vac rms at sea level.	First test between cable conductors, then test between both conductors and 1.5 inch wide strip of conducting foil wrapped around plastic housing. AMP Spec 109-29-1.
Insulation resistance.	5000 megohms minimum initial. 1000 megohms minimum final.	First test between cable conductors, then test between cable conductor(s) and plastic housing. AMP Spec 109-28-4.
Temperature rise vs current.	30°C maximum temperature rise at specified current.	Measure temperature rise vs current. See Figures 2A, 2B and 6. AMP Spec 109-45-1.
<b>MECHANICAL</b>		
Sinusoidal vibration.	No discontinuities greater than 1 microsecond. See Note (a).	Subject mated connectors with wire taps to 10 G's between 10 to 500 Hz traversed in 15 minutes. 3 hours in each of 3 mutually perpendicular planes. See Figure 5. AMP Spec 109-21-2.
Physical shock.	No discontinuities greater than 1 microsecond. See Note (a).	Subject mated connectors with wire taps to 50 G's half-sine wave of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 5. AMP Spec 109-26-1.
Locking mechanism strength.	Housing latches shall remain intact. FASTON receptacles shall remain fully engaged.	Subject assembly to 12 pounds maximum tensile at constant rate of .5 inch per minute. See Figure 7.
Unmating force.	3 pound minimum for each receptacle. See Note (a).	Pull receptacles individually at constant rate of .5 inches per minute. AMP Spec 109-42, Condition A.

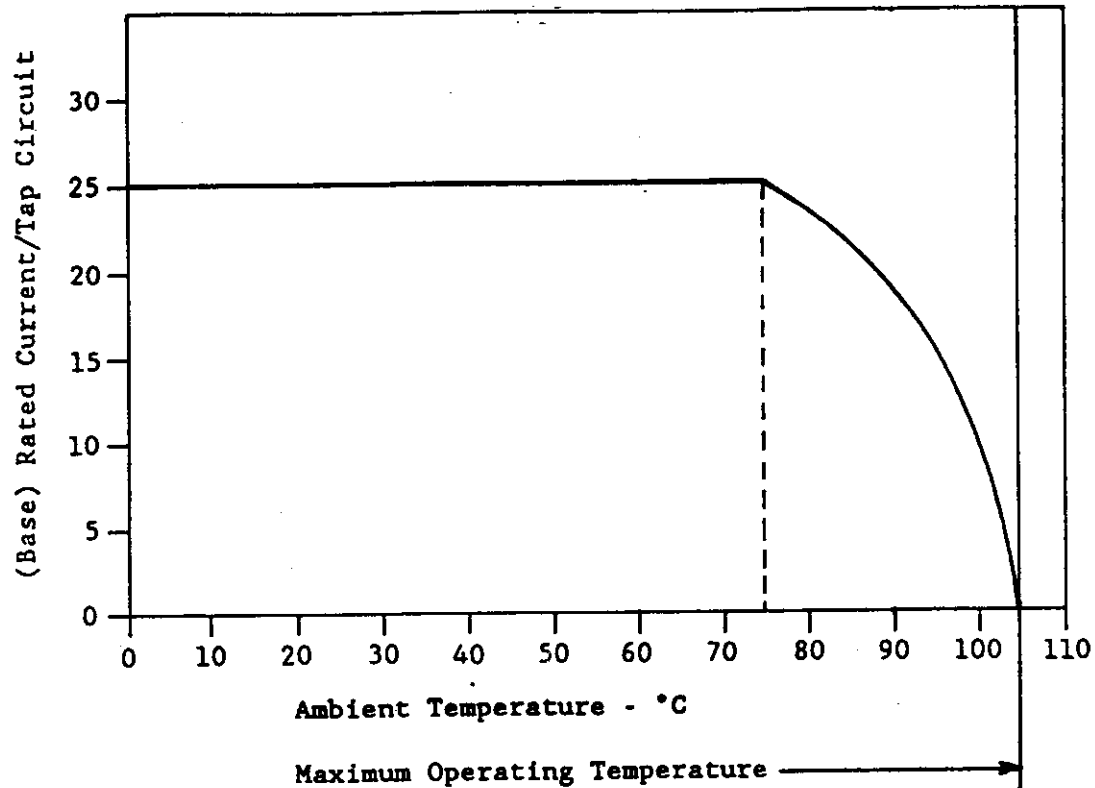
Figure 1 (cont)

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Test Description	Requirement	Procedure
<b>ENVIRONMENTAL</b>		
Thermal shock.	See Note (a).	Subject mated connectors with wire taps to 25 cycles between -40 and 105°C. AMP Spec 109-22.
Humidity-temperature cycling.	See Note (a).	Subject mated connectors with wire taps to 10 humidity-temperature cycles between 25 and 65°C at 95% RH. AMP Spec 109-23-3, Condition B.
Mixed flowing gas.	See Note (a).	Subject mated connectors with wire taps to environmental class III for 20 days. AMP Spec 109-85-3.
Temperature life.	See Note (a).	Subject mated connectors with wire taps to temperature life at 140°C for 720 hours duration. AMP Spec 109-43.

(a) Shall meet visual requirements, show no physical damage and shall meet requirements of additional tests as specified in test sequence of Figure 3.

Figure 1 (end)



Base current is for 1 tap circuit consisting of 12 AWG X 65 strand insulated copper wire crimped to AMP Ultra-Pod FASTON receptacle using open barrel "F" crimp. Power is tapped from 1 .020 thick conductor of 2 conductor (split) cable with both conductors energized.

Figure 2A  
Current Carrying Capability

Wire Gauge AWG	Conductor Thickness	Multiplication Factor (F)
12	.010	.93
	.020	1
14	.010	.70
	.020	.76
16	.010	.51
	.020	.56
18	.010	.39
	.020	.44

Note: To determine acceptable current carrying capacity for wire gauge and cable combination chosen, use multiplication factor (F) from above table and multiply times base rated current at maximum ambient temperature shown in Figure 2A.

Figure 2B  
Multiplication Factor (F)

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### 3.6. Product Qualification And Requalification Test Sequence

Test Or Examination	Test Group (a)		
	1	2	3
	Test Sequence (b)		
Examination of product	1,6	1,11	1,8,10
Termination resistance, dry circuit	2,5	2,8	
Dielectric withstanding voltage			3,7
Insulation resistance			2,6
Temperature rise vs current		3,9	
Vibration	3	7(c)	
Physical shock	4		
Locking mechanism strength			9
Unmating force.		10	
Thermal shock			4
Mixed flowing gas		4(d)	
Humidity temperature cycling		5	5
Temperature life		6	

- (a) See Para 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Discontinuities shall not be measured. Energize at rated current per Figure 2.
- (d) Condition samples with 6 mate/unmate cycles.

Figure 3

## 4. QUALITY ASSURANCE PROVISIONS

### 4.1. Qualification Testing

#### A. Sample selection.

Connector housings and contacts shall be prepared in accordance with applicable instruction sheets and selected at random from current production. Wire taps shall be constructed of AMP Ultra-Pod fully insulated FASTON receptacles crimped to high temperature silicone insulated copper wire per Figure 6. All test groups shall consist of 16 samples each, equally divided for 10 and 20 mil conductor thickness. All samples shall be constructed using split cable projecting 2 inches outside plastic housing on FASTON side and 6.25 inches on opposite side. Ligatures shall be sheared on all samples. Strip .5 inch insulation from unterminated cable ends. Each sample shall be monitored for termination resistance where required. Circuits shall be series connected and individually monitored for temperature rise measurements.

#### B. Test sequence.

Qualification testing shall be verified by testing samples as specified in Figure 3.

#### 4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

#### 4.3. Acceptance

Acceptance is based upon verification that product meets requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

#### 4.4. Quality Conformance Inspection

Applicable AMP quality inspection plan shall specify acceptable quality sampling level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawing and this specification.

#### 4.5. Certification

This product has been recognized under Component Recognition Program of Underwriters Laboratories Inc., Electrical File Number E13288.

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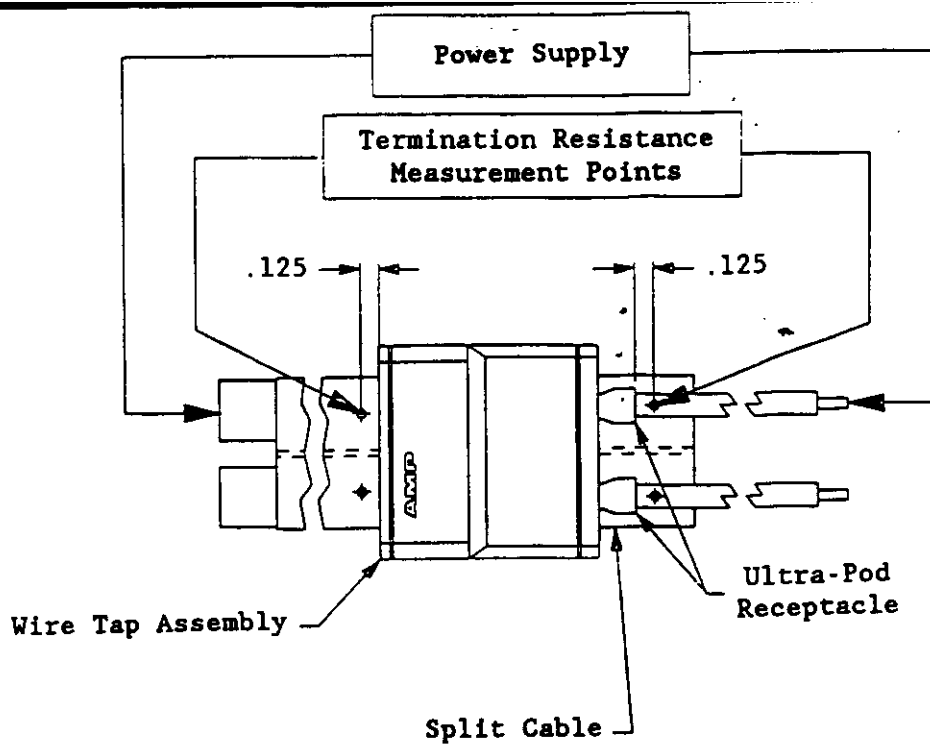


Figure 4  
Termination Resistance Measurement Points

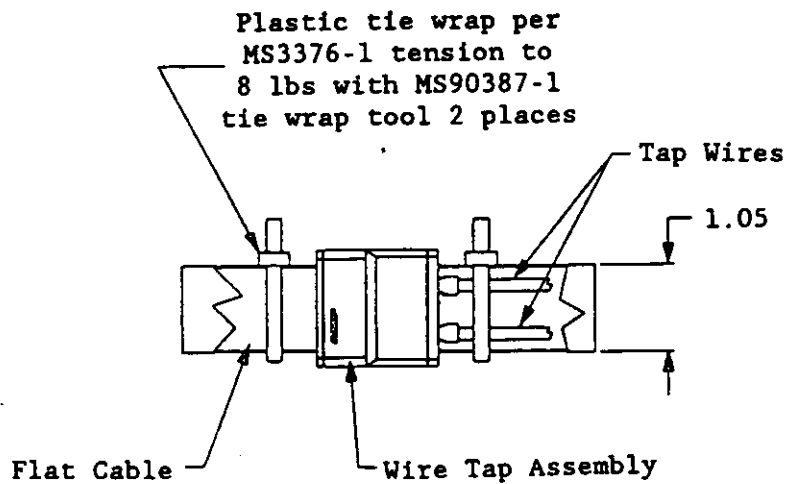
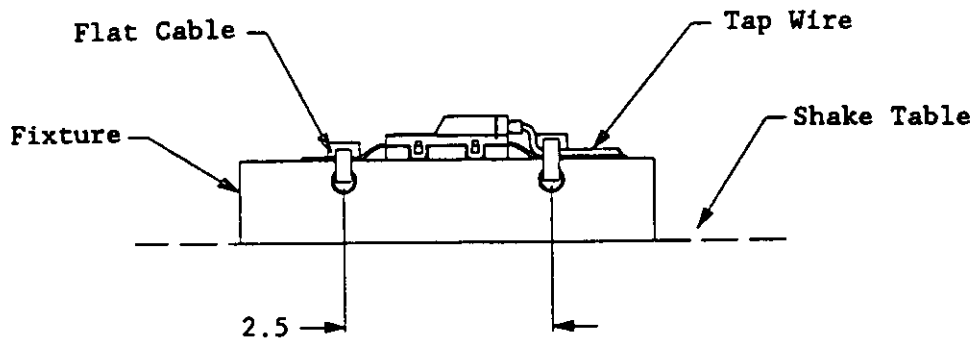


Figure 5  
Vibration And Physical Shock Mounting Fixture



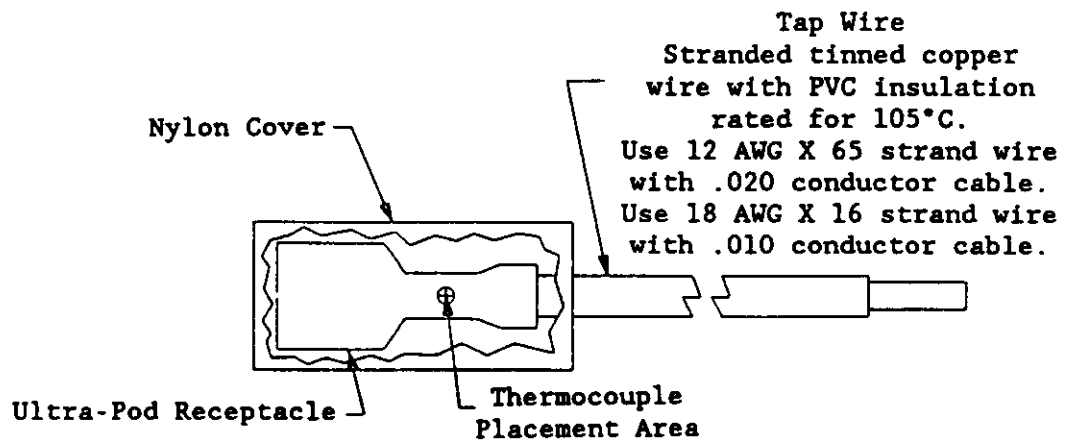
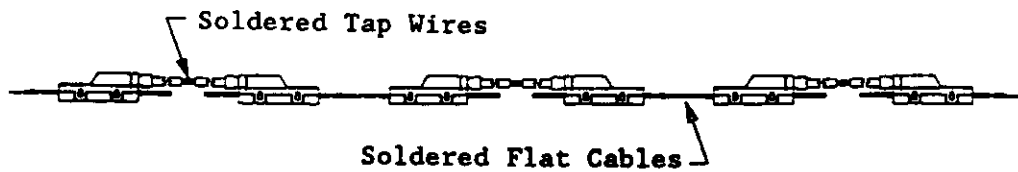
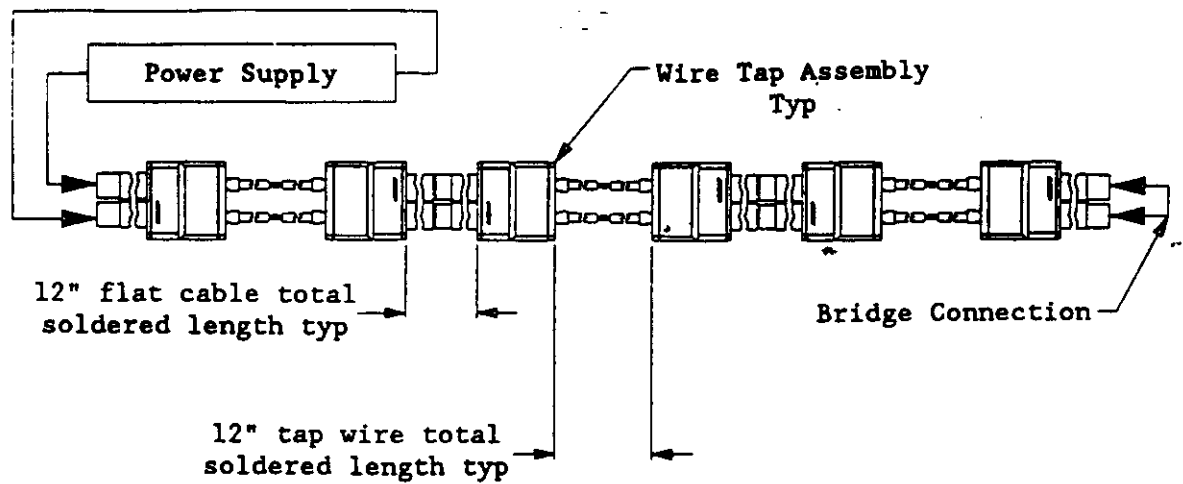


Figure 6  
Temperature Rise Vs Current Test

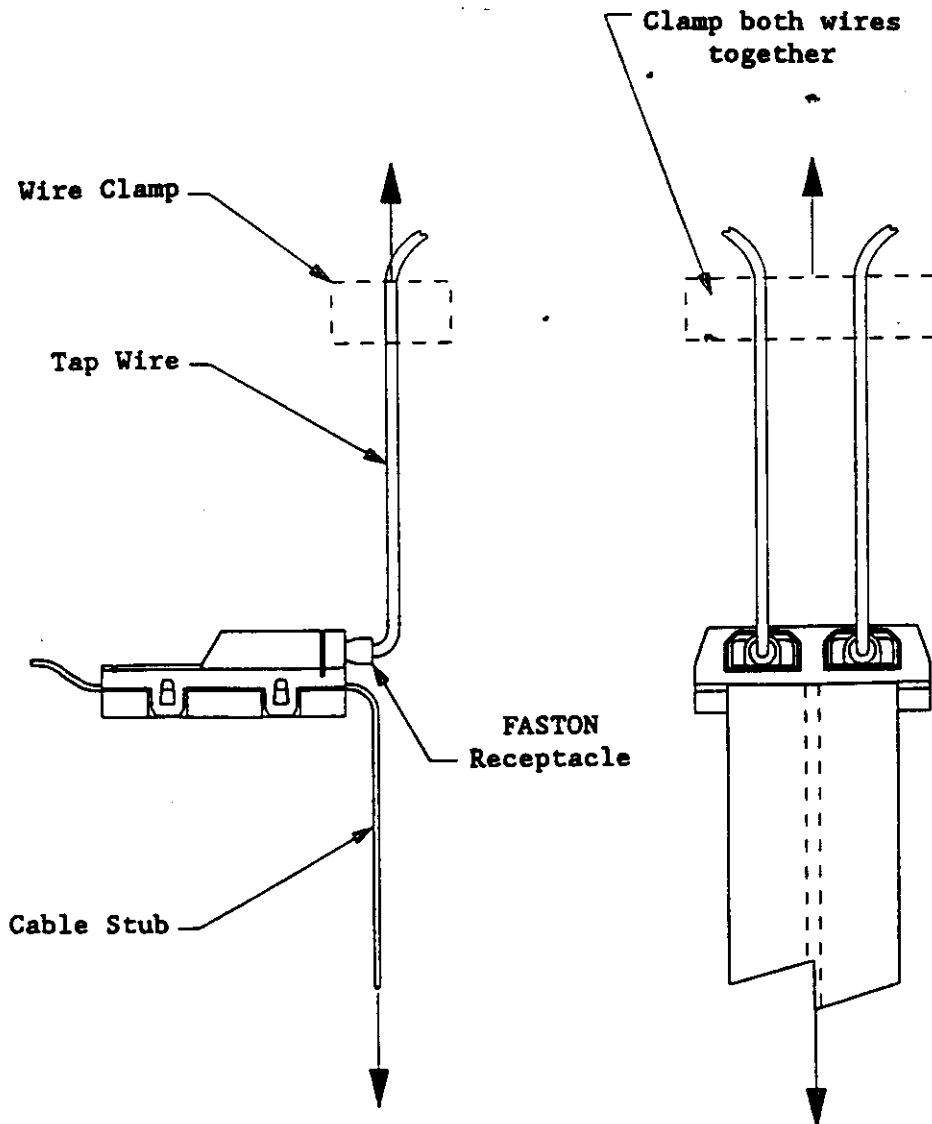


Figure 7  
Locking Mechanism Strength

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