



MAG-MATE* Standard Series Terminal 0.500 Box Height

1. INTRODUCTION

1.1. Purpose

Testing was performed on the TE Connectivity (TE) 500 Series MAG-MATE* Terminal to determine its conformance to the requirements of 108-2053, Rev. C.

1.2. Scope

This report covers the electrical, mechanical, and environmental performance of 500 Series MAG-MATE Terminals. The test file number for this testing is ATL84-368 and ATL87-243. Additional testing was performed at the TE Connectivity Shanghai Electrical Components Test Laboratory between 24Apr18 and 29Jun18. The test file number for this testing is TP-18-00890. Additional testing was performed at the TE Connectivity Shanghai Electrical Components Test Laboratory between 06Jul18 and 19Oct18. The test file number for this testing is TP-18-01793. Additional testing was performed at the TE Connectivity Shanghai Electrical Components Test Laboratory between 05Dec18 and 25Jan19. The test file number for this testing is TP-18-03304.

1.3. Conclusion

All part numbers listed in paragraph 1.5 conformed to the electrical, mechanical, and environmental performance requirements of 108-2053, Rev. C.

1.4. Product Description

MAG-MATE Series 500 Terminals are designed for a housing (customer supplied) with a terminal cavity depth of approximately 0.500 inch. Each cavity is a rectangular box with slots in two opposing walls to permit lacing and retention of magnet wire prior to terminal insertion.

The 'U' shaped bottom portion of the terminal consists of two slotted beams which displace the insulating coating from the wire, providing four areas of contact with the wire conductor. Locking barbs on the sides of each beam assure retention of the terminal in the cavity. Various I/O configurations (ie: 250 & 187 tabs in addition to 090 dia. pins) are available for making connection to the upper portion of these terminals.

1.5. Test Specimens

The test specimens were representative of normal production lots, and the following part numbers were used for testing (see Figure 1).

Part Number	Description
63155-1	500 Box Mag-Mate 250 FASTON Tab terminal terminated to 22-20 AWG [0.64-0.81mm] copper wire. Slot ID: 18
62923-1	500 Box Mag-Mate 250 FASTON Tab terminal terminated to 19-17 AWG [0.91-1.15mm] copper wire. Slot ID: 24
63064-1	500 Box Mag-Mate 250 FASTON Tab terminal terminated to 15-16 AWG [1.29-1.45mm] copper wire. Slot ID: 40
63371-1	500 Box Mag-Mate 250 FASTON Tab terminal terminated to 14-13 AWG [1.63-1.83mm] copper wire. Slot ID: 43
63425-1	500 Box Mag-Mate 250 FASTON Tab terminal terminated to 12 AWG [2.05mm] copper wire. Slot ID: 50
1217069-1	500 Box Standard MAG-MATE special leaf terminal terminated to 21-18.5 AWG [0.72-0.97 mm] Al wire. Slot ID: 16
63495-1	500 Box Standard Mag-Mate 250 FASTON Tab terminal terminated to 21-19 AWG [0.72-0.91 mm] Al wire. Slot ID: 18
63643-1	500 Box Standard Mag-Mate 187 FASTON Tab terminal terminated to 18.5-16.5 AWG [0.97-1.22 mm] Al wire. Slot ID: 24
63667-1	500 Box Standard Mag-Mate 187 FASTON Tab terminal terminated to 16.5-15 AWG [1.22-1.45 mm] Al wire. Slot ID: 32
63459-2	500 Box Standard Mag-Mate 250 FASTON Tab terminal terminated to 15-14 AWG [1.45-1.63 mm] Al wire. Slot ID: 40
63816-1	500 Box Standard Mag-Mate 250 FASTON Tab terminal terminated to 13-12 AWG [1.83-2.05 mm] Al wire. Slot ID: 43
63425-1	500 Box Standard Mag-Mate 250 FASTON Tab terminal terminated to 12-11 AWG [2.05-2.30 mm] Al wire. Slot ID: 50

Figure 1

1.6. Qualification Test Sequence

Test or Examination	Test Groups (a)		
	1	2	3
	Test Sequence (b)		
Examination of Product	1, 7	1, 5	1
Termination Resistance, Specified Current		2, 4	
Termination Resistance, Dry Circuit	2, 6		
Current Cycling		3	
Insertion Force			2
Extraction Force			3
Thermal Shock	3		
Humidity-Temperature Cycling	5		
Temperature Life	4		


NOTE

(a) See Paragraph 1.5

(b) Numbers indicate sequence which tests were performed.

Figure 2

1.7. Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature:	15°C to 35°C
Relative Humidity:	20% to 80%

2. SUMMARY OF TESTING

2.1. Examination of Product – Groups 1, 2, 3

Specimens were visually examined according to EIA 364-18B and no evidence of physical damage detrimental to the operation of the part was observed.

2.2. Termination Resistance, Specified Current – Group 2

All termination resistance measurements, taken at specified current, were less than the specified requirement of 0.500 milliohms maximum change.

2.3. Termination Resistance, Low Level Current – Group 1

All termination resistance measurements were less than the specified requirement of 0.500 milliohms maximum change.

2.4. Current Cycling – Group 2

After 480 cycles of cycling the current on and off, there was no evidence of physical damage to the test samples. All termination resistance measurements were less than the specified requirement of 0.500 milliohms maximum change.

2.5. Insertion Force – Group 3

All insertion forces were less than the specification requirement of 120 pounds for Polyester 30% glass filled housings.

2.6. Extraction Force – Group 3

All extraction forces were greater than the specification requirement of 14 pounds for Polyester 30% glass filled housings.

2.7. Thermal Shock – Group 1

There was no evidence of physical damage to the connectors as a result of thermal shock

2.8. Humidity-Temperature Cycling – Group 1

There was no evidence of physical damage to the connectors as a result of exposure to temperature-humidity cycling extremes.

2.9. Temperature Life – Group 1

There was no evidence of physical damage to the connectors as a result of exposure to elevated temperatures.

3. TEST METHODS

3.1. Examination of Product

The specimens were visually examined as stated in TE Connectivity Product Specification 108-2053, Rev. C, paragraph 3.4 and in accordance with test procedure EIA-364-18B.

3.2. Termination Resistance, Specified Current

The specimens were subjected to a termination resistance test as stated in TE Connectivity Product Specification 108-2053 Rev. C, Paragraph 3.4 and in accordance with test procedure EIA-364-6. Using a four-terminal measuring technique, termination resistance was measured at specified current were made. The measurement points were at the locations indicated in Figure 3 of Product Specification 108-2053 Rev. C.

3.3. Termination Resistance, Low Level Current

The specimens were subjected to a low level contact resistance test as stated in TE Connectivity Product Specification 108-2053 Rev. C, Paragraph 3.4 and in accordance with test procedure EIA-364-23C. Using a four terminal measuring technique, low level contact resistance was measured using a test current maintained at a 100 milliamperes maximum with a 20 millivolt maximum open circuit voltage. The measurement points were at the locations indicated in Figure 3 of Product Specification 108-2053 Rev. C.

3.4. Current Cycling

The specimens were subjected to a current cycling test as stated in TE Connectivity Product Specification 108-2053 Rev. C, Paragraph 3.4 and in accordance with test procedure EIA-364-55. The specimens were subjected to 100% of rated current for 480 cycles consisting of current ON for 15 minutes and current OFF for 15 minutes.

3.5. Insertion Force

The force required to terminated terminals into plastic housing cavities was measured.

3.6. Extraction Force

The force required to pull terminated terminals out of their cavities was measured.

3.7. Thermal Shock

The specimens were subjected to a thermal shock test as stated in TE Connectivity Product Specification 108-2053 Rev. C, Paragraph 3.4 and in accordance with test procedure EIA-364-32. The specimens were subjected to 25 cycles between -65°C and 125°C with 30 minute dwells at temperature extremes and less than 1 minute transition time between temperatures.

3.8. Humidity-Temperature Cycling

The specimens were subjected to a humidity-temperature cycling test as stated in TE Connectivity Product Specification 108-2053 Rev. C, Paragraph 3.4 and in accordance with test procedure EIA-364-31D, Method III. The specimens were subjected to 10 cycles (10 days) between 25°C and 65°C at 95%RH.

3.9. Temperature Life

The specimens were subjected to a temperature life test as stated in TE Connectivity Product Specification 108-2053 Rev. C, Paragraph 3.4 and in accordance with test procedure EIA-364-17. Connectors were subjected to 33 days at an elevated temperature of 118°C.