

# ANSI C119. 4

REPORT DATE: 10/11/2017

**Class of Test** A

**Current Cycle Data Sheet**

**Test Method:** CCT

**Part Tested:** TCS-4/0-336 Power Grip (M050517-50)

**Date Started:** 8/22/17

**Date Completed:** 10/10/2017

**Project #** \_\_\_\_\_

**Cable (main)** Size 1/0 AWG Type ACSR Length 18"

**Conductor Preparation:** \_\_\_\_\_

**Compounded?** Yes

**Cable (tap)** Size 1/0 AWG SOL CU Type SOL CU Length 18"

**Wire Brushed?** Yes

**Current Cycle: On Period (Hrs)** 1 **Off Period (Hrs)** 1

**Test Current:** 328 Amps

**Test #** 839

**Main Wire Range:** Max 336 Kcmil Min 1/0 AWG

**Tap Wire Range:** Max 1/0 (.321) Sol Cu Bail Min Tin Plated Cu Bail

Compression Connector

Mechanical Connector

**Compound Used** De-Ox V (white)

**Crimp tool:** ILC-12 ULT-9-Z Crimped on to the Bail Tap wire #1 Cu

**Screws** E6116C00V

screw/bolt (s) per conductor: \_\_\_\_\_

**Die # O Die Main** 1 **Tap** 1

**Torque:** 220 **In-lb**

**# of Crimps** 1 **Crimps** 1

**Mounting Bolts** N/A

**Torq:** N/A **in-lbs**

Measurement Point	Cycle Number	Connector Temp (°C)				Control Conductor (°C)	Ambient (°C)	Cycle Number	Connector Resistance (Measured) Micro Ohms (μΩ)				
		C1	C2	C3	C4				Amb	R1	R2	R3	R4
1	30	58.6	57.1	59.8	61.4	124.3	20.5	30	20.5	201.8	200.7	202.8	203.4
2	50	57.5	56.1	58.5	59.6	126	20.4	50	20.5	199.5	207.5	202.7	202.3
3	75	58.3	56.2	59.2	61.1	125.1	20.4	75	20.4	204.7	206.5	207.2	205.3
4	100	58	56.8	58.7	60.6	125	20.5	100	21.0	204.8	207.3	208.4	208.3
5	125	58.5	57.9	60.4	60.9	128.8	21.1	125	19.8	205.7	206.4	205.8	207.6
6	165	59.3	56.9	58.6	62.3	121.6	20.3	165	21.1	210.5	208.8	207.2	209.2
7	205	58.7	57.1	61.6	62.8	125.7	20.8	205	21.1	203.9	209.8	208.5	208.1
8	245	60.6	55.8	63.5	65	128.6	20.8	245	21.1	210.0	210.3	209.1	210.4
9	325	58.7	58.9	64.8	63.4	125	20.5	325	21.1	210.6	210.3	212.5	212
10	405	59.6	58.3	63.1	63.7	123.5	20.2	405	20.9	204.1	213.5	215.1	213.4
11	500	61.5	60.2	65.6	65.3	126	21.1	500	20.8	215.8	213.9	215.6	215.6

**Residual Torq (fwd direction):**  
**Chang** (100%) (100%) (100%) (100%)

Date: 11-Oct-17  
Product: TCS-4/0-336 Power Grip (M050517-50)  
Type Test: ANSI C119. 4 Class A  
Test Facility: UTILCO  
Tested By: Bryan Donell Date: 22-Aug-17  
Supervisor: Steve Snoke Date: 10/11/2017  
Reviewed By: Robert Westbrook Date: 10/18/2017

**Purpose:**

Qualification Test – Part # / Cat #	<b>TCS-4/0-336 Power Grip (M050517-50)</b>
Main wire range	<b>336 Kcmil - 1/0 AWG</b>
Tap Wire Range	<b>1/0 (.321) Sol Cu Bail - Tin Plated Cu Bail</b>
Connector Material	<b>6061 T6</b>
Screw (wire binding)	<b>E6116C00V</b>
Lubricant (Screws)	<b>No Wax</b>
Plating	<b>616 Safety Film</b>
Mounting screws	<b>N/A</b>
Mounting Torque	<b>N/A</b>
Wire Size Used for testing	<b>1-0 AWG (ACSR) in main - 1-0 (.321) Sol Cu tin plated bail for the tap</b>
Conductor Strength	
Manufacturer (Wire)	
Insulation Type, Thickness	<b>Bare</b>

**Device:**

**UTILCO's TCS-4/0-336 Power Grip (M050517-50)** is made from extruded high strength aluminum and is clear plated with 616 Safety Film. The screw is manufactured from aluminum and is gold anodized.

**Procedure:**

**The TCS-4/0-336 Power Grip (M050517-50)** Connector was tested using bare ACSR/Copper conductors. The conductors were wire brushed and De-Ox V (white) was applied.  
The screw was torqued to: **220** In-lbs

**Four TCS-4/0-336 Power Grip (M050517-50)** were used in this test. Thermocouples were placed on the wire entry area.  
Conductor Length: 18"

The test consisted of 500 cycles. Each cycle had **1 Hours "On"** Time and **1 Hours "Off"** Time  
The test current was raised over the first 25 cycles so the control conductor attained a 100° -105°C temperature rise over ambient temperature.  
The test current used was **328** amperes.

**Results:**

**UTILCO's TCS-4/0-336 Power Grip (M050517-50)** connector successfully completed the ANSI Heat Cycle test using bare ACSR/Copper conductors. The connector temperatures did not exceed the temperature of the control conductor, stability was within +/- 10 and the resistance of the connections did not exceed ± 5% of the average resistance.  
The maximum stability value was: **4.9**

**Condition after testing:**

All Samples appeared to be undamaged after testing

See data sheets and charts attached for the test details.

**ANSI C119. 4**

**Class of Test** A  
**Part Tested:** -4/0-336 Power Grip (M05051) **Date Started:** 8/22/17 **Date Completed:** 10/10/17  
**Cable (main)** Size 1/0 AWG Type ACSR Length 18"  
**Cable (tap)** Size 1/0 AWG Type SOL CU Length 18"  
**Current Cycle: On Period (Hrs)** 1 **Off Period (Hrs)** 1 **Test Current:** 328

**Test Method:** CCT  
**Project #** 0  
**Conductor Preparation:** Compounded? Yes  
Wire Brushed? Yes  
**Amps** 328 **Test #** 839

**Compression Connector**  
**Crimp tool:** ULT-9-Z Crimped **Die#** O Die  
**Number of crimps:** 1 **Tap** 1

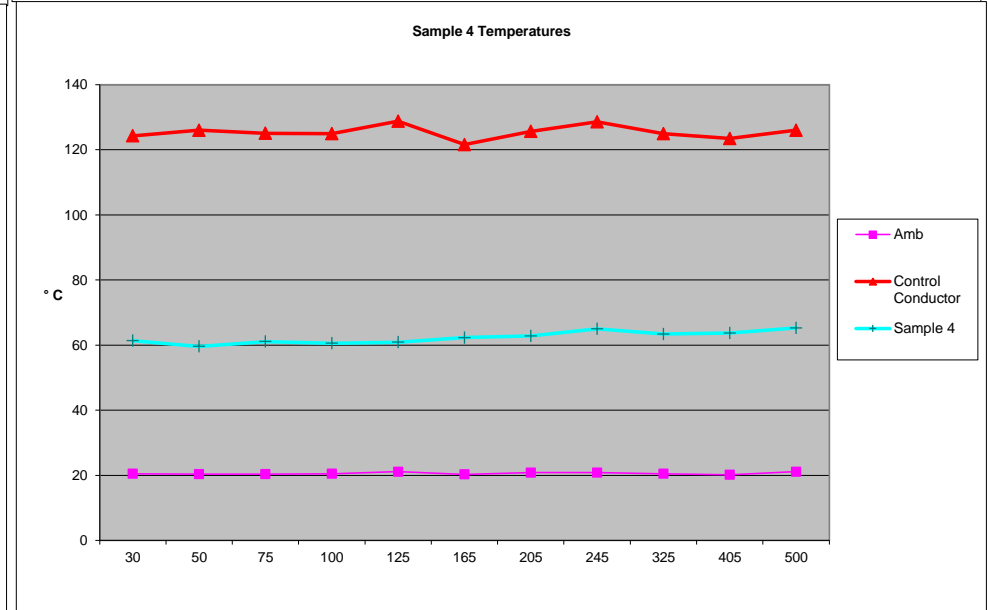
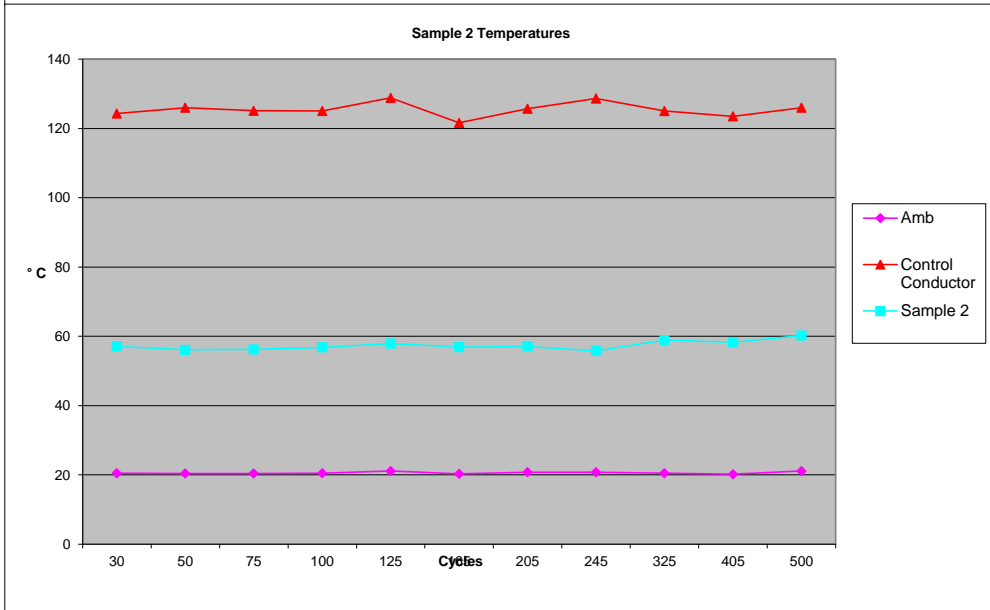
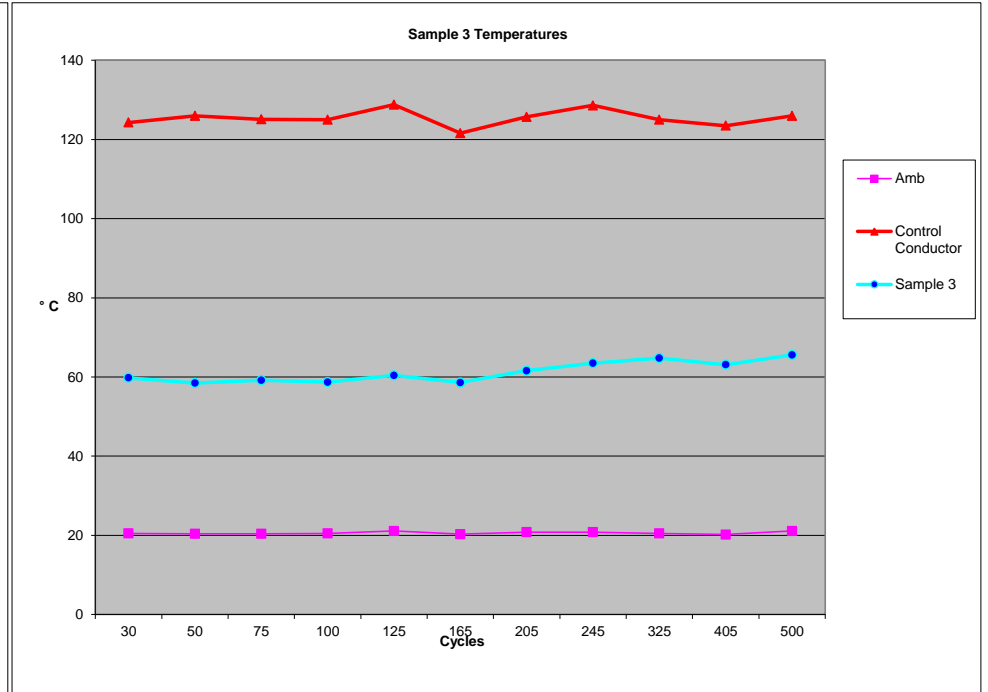
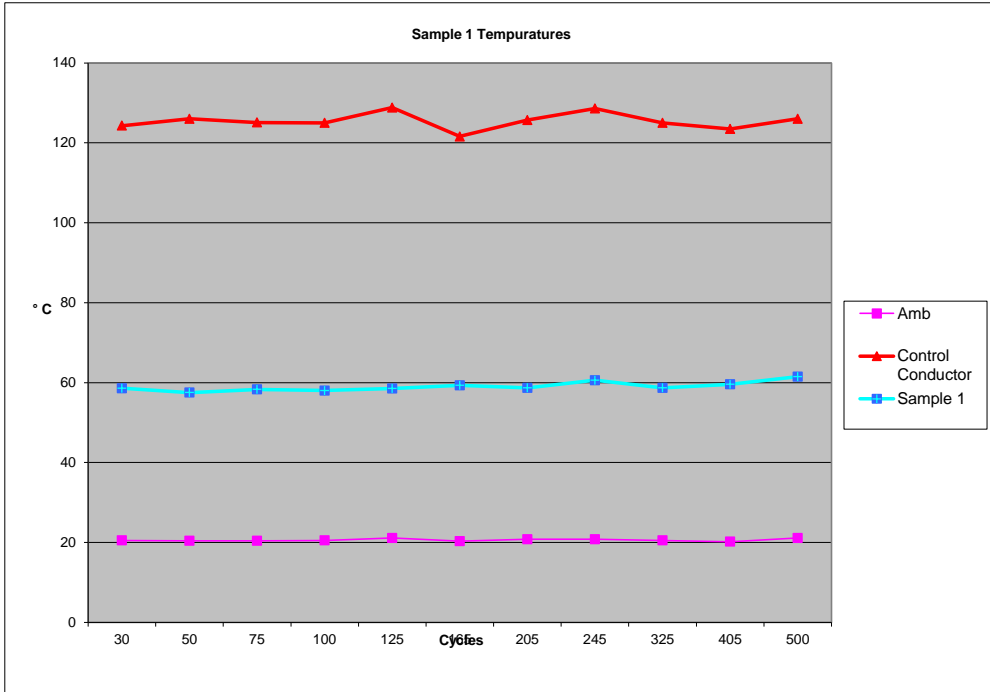
**Mechanical Connector** **Compound Used** De-Ox V (white)  
**Number of Screws** E6116C00V 0 screw/bolt (s) per conductor:  
**Torque:** 220 In-lb  
**Mounting Bolts** N/A **Torq:** N/A

Measurements Points	Cycle Number	Ambient (°C)	Control Conductor (°C)	Connector Temp (°C)				Temperature Difference (°C)				Stability Factor (Si)				Connector Resistance (Measured) Micro Ohms (μΩ)				Connector Resistance (Corrected to 20C) Micro Ohms (μΩ)										
				C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4	Amb	C1	C2	C3	C4	C1	C2	C3	C4						
1	30	20.5	124.3	58.6	57.1	59.8	61.4	65.7	67.2	64.5	62.9	0.7	0.8	0.3	0.1	20.5	201.8	200.7	202.8	203.4	201.4	200.3	202.4	203.0						
2	50	20.4	126	57.5	56.1	58.5	59.6	68.5	69.9	67.5	66.4	2.1	1.9	3.3	3.4	20.5	199.5	207.5	202.7	202.3	199.1	207.1	202.3	201.9						
3	75	20.4	125.1	58.3	56.2	59.2	61.1	66.8	68.9	65.9	64	0.4	0.9	1.7	1.0	20.4	204.7	206.5	207.2	205.3	204.4	206.2	206.9	205.0						
4	100	20.5	125	58	56.8	58.7	60.6	67	68.2	66.3	64.4	0.6	0.2	2.1	1.4	21.0	204.8	207.3	208.4	208.3	204.0	206.5	207.6	207.5						
5	125	21.1	128.8	58.5	57.9	60.4	60.9	70.3	70.9	68.4	67.9	3.9	2.9	4.2	4.9	19.8	205.7	206.4	205.8	207.6	205.9	206.6	206.0	207.8						
6	165	20.3	121.6	59.3	56.9	58.6	62.3	62.3	64.7	63	59.3	4.1	3.3	1.2	3.7	21.1	210.5	208.8	207.2	209.2	209.6	207.9	206.3	208.3						
7	205	20.8	125.7	58.7	57.1	61.6	62.8	67	68.6	64.1	62.9	0.6	0.6	0.1	0.1	21.1	203.9	209.8	208.5	208.1	203.0	208.9	207.6	207.2						
8	245	20.8	128.6	60.6	55.8	63.5	65	68	72.8	65.1	63.6	1.6	4.8	0.9	0.6	21.1	210.0	210.3	209.1	210.4	209.1	209.4	208.2	209.5						
9	325	20.5	125	58.7	58.9	64.8	63.4	66.3	66.1	60.2	61.6	0.1	1.9	4.0	1.4	21.1	210.6	210.3	212.5	212.0	209.7	209.4	211.6	211.1						
10	405	20.2	123.5	59.6	58.3	63.1	63.7	63.9	65.2	60.4	59.8	2.5	2.8	3.8	3.2	20.9	204.1	213.5	215.1	213.4	203.4	212.7	214.3	212.6						
11	500	21.1	126	61.5	60.2	65.6	65.3	64.5	65.8	60.4	60.7	1.9	2.2	3.8	2.3	20.8	215.8	213.9	215.6	215.6	215.1	213.2	214.9	214.9						
				<b>Average Temperature Difference</b>				<b>66.4</b>	<b>68.0</b>	<b>64.2</b>	<b>63.0</b>					<b>Average Resistance</b>				<b>205.9</b>	<b>208.0</b>	<b>208.0</b>	<b>208.1</b>							
				<b>Maximum Stability Factor</b>								<b>4.1</b>	<b>4.8</b>	<b>4.2</b>	<b>4.9</b>					<b>Min Acceptable Resistance</b>				<b>195.6</b>	<b>197.6</b>	<b>197.6</b>	<b>197.7</b>			
																										<b>Max Allowable Resistance</b>	<b>216.2</b>	<b>218.4</b>	<b>218.4</b>	<b>218.5</b>

1. The connector temperature cannot exceed the control conductor temperature

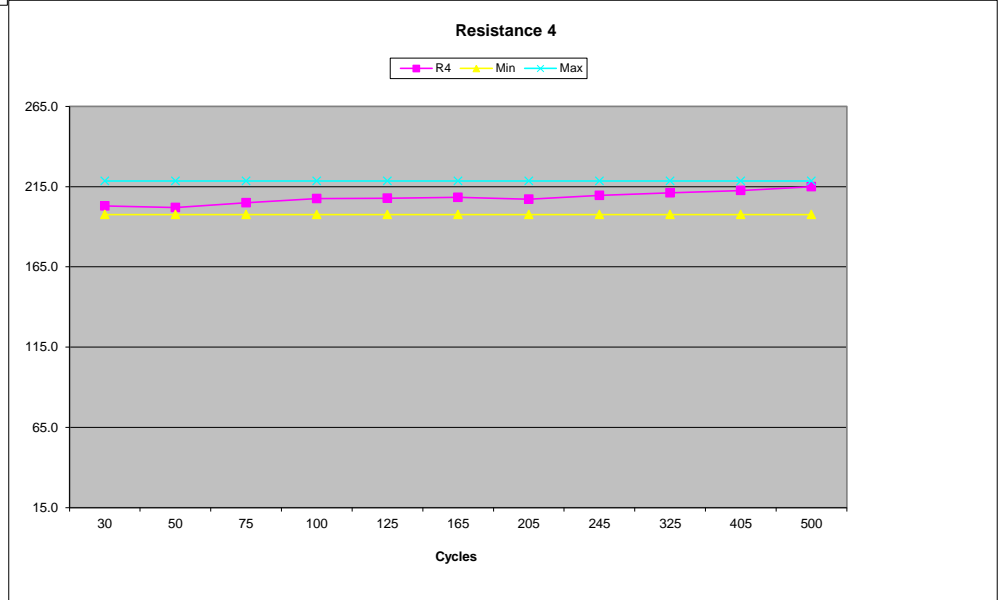
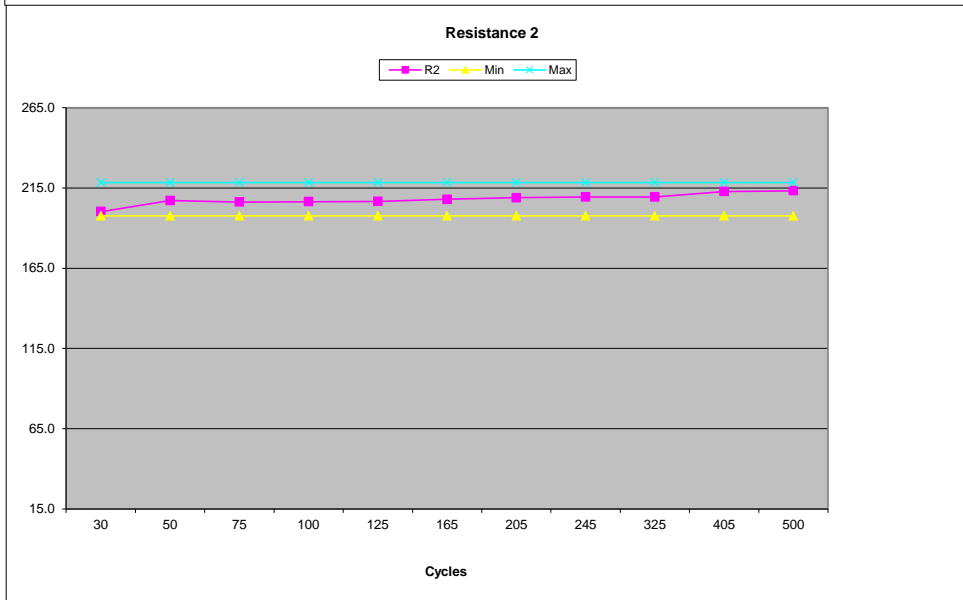
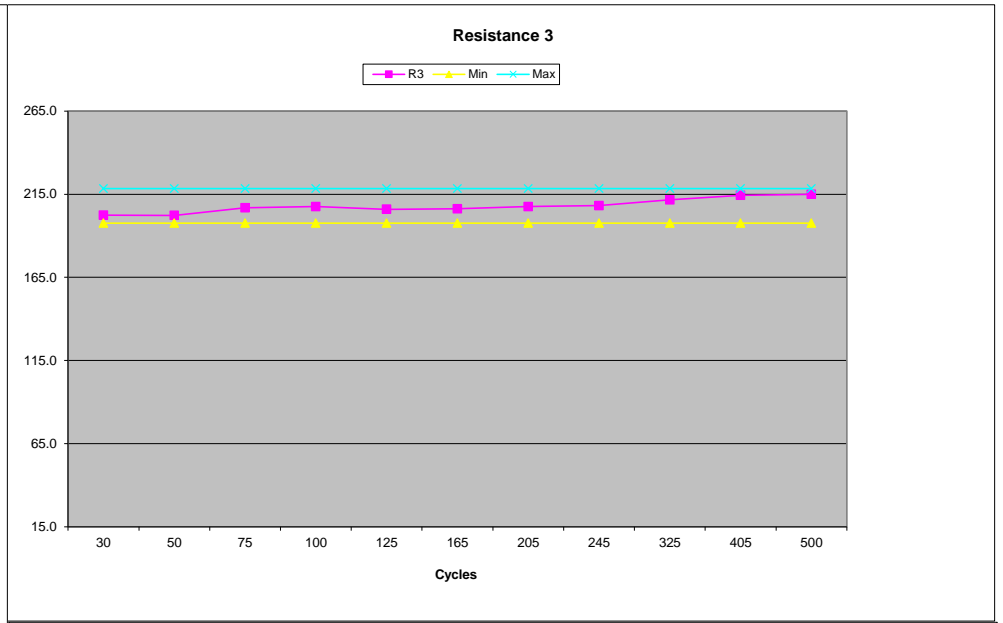
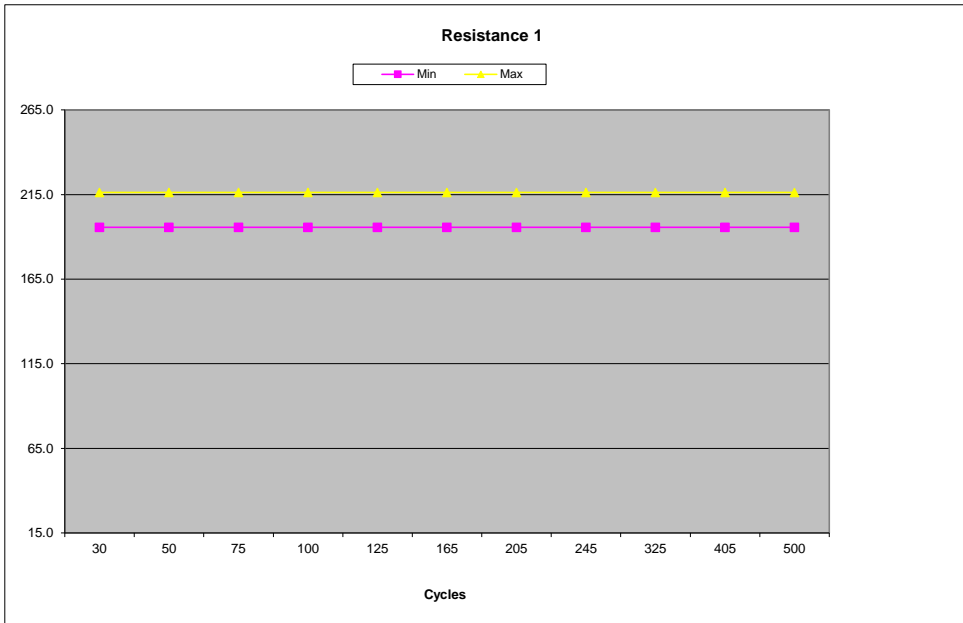
2. The stability factor "Si" shall not exceed 10 for each of the connector temperature measurements recorded at the specified intervals.

3. The resistance of the connectors tested shall not vary by more than 5% from the average of the measured values.



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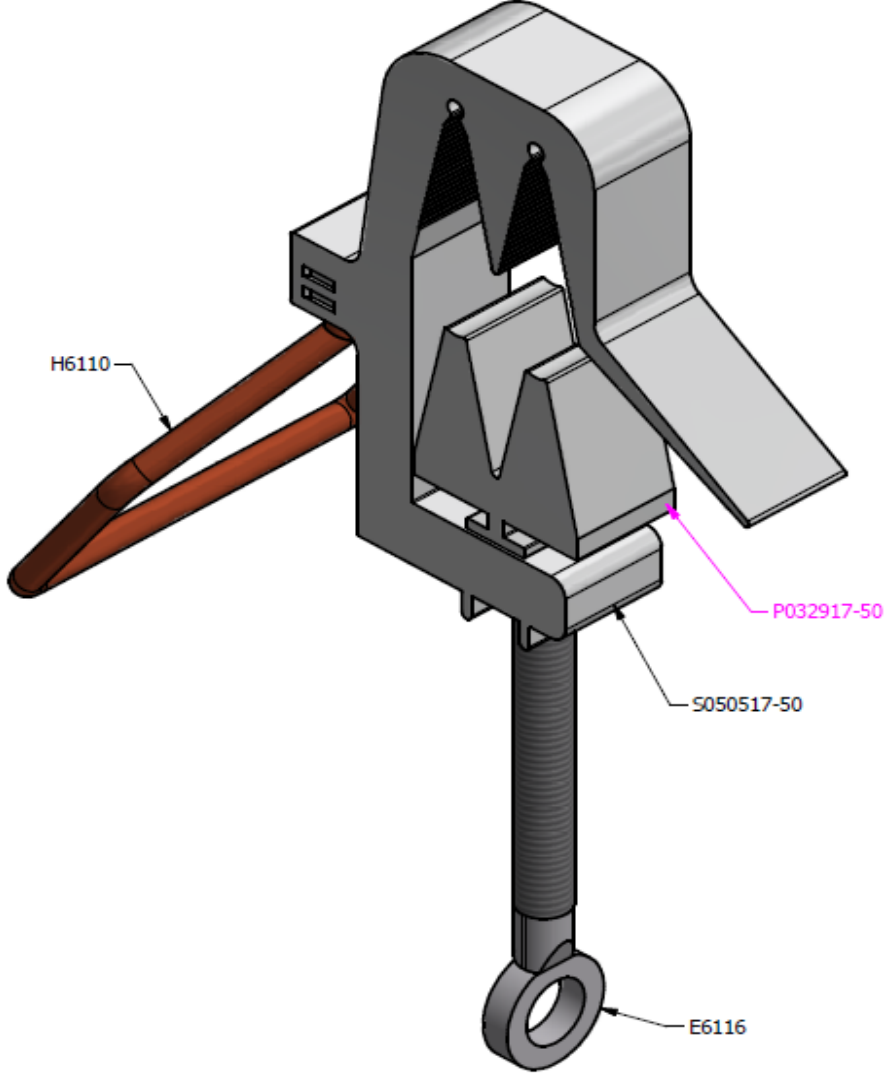
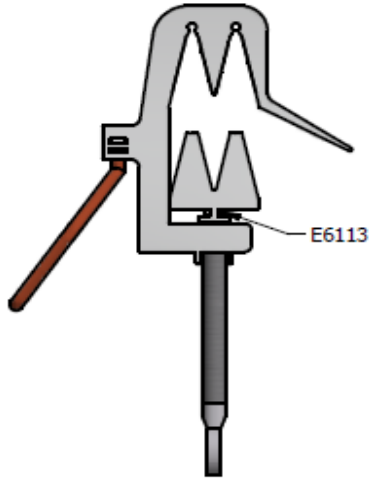


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Report 839

# Current part print

CAT. NO.: TBD		TOLERANCES UNLESS OTHERWISE SPECIFIED 2 PL. DEC. ±.015      TRUE C.L. ±.015 3 PL. DEC. ±.015      ANGLES ±1	
			
DRAWN BY: DR	SCALE:	DWG NO: M050517-50	
DATE: 5/12/2017	SIZE: A	SHEET: 1 OF 1	
REV	DESCRIPTION	APPROVED BY:	
	DRAWN FOR QUOTE DFR 05-12-17		

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