

PRODUCT: "Power-Grip" Self Cleaning Hot Line Connector SCH-636 DATE: 11/2/94

TYPE TEST: ANSI C119.4 Heat Cycle Class A

TEST FACILITY: Utilco Lab

REVIEWED BY: *[Signature]* 11/3/94

TESTED BY: *[Signature]* 11-3-94

SUPERVISOR: *[Signature]* 11-3-94

## PURPOSE:

Qualification Test - "Power-Grip" Self Cleaning Hot Line Connector SCH-636 - Main and Tap Wire Range of 636 MCM-336 aluminum 600 MCM-300 MCM copper conductors - to ANSI C119.4 Heat Cycle Testing, Class A. using field aged 795 MCM all aluminum 37 strand "Arbutus" conductor.

## DEVICE:

Utilco "Power-Grip" Self Cleaning Hot Line Connector SCH-636 is made from extruded 6061-T6 aluminum and is plated with Safety-Film 616 Protector Film. The eyebolt is manufactured from 6061-T6 aluminum and is gold anodized. The hexagon tap bolt is manufactured from 6262-T9 aluminum and is also gold anodized. The wire openings of the "Power-Grip" Self Cleaning Hot Line Connector are a Patented wedge-shaped design. The surfaces of the wedge are serrated. The pads on the bolts contain the wire and force it into the wedge across the serrations. This action "cleans" the wire of oxidation and contaminates.

## PROCEDURE:

The SCH-636 Hot Line Connector was tested using 795 MCM all-aluminum 37 strand "Arbutus" conductor, which was field aged and provided by a large utility. The 795 conductor was approximately 1.05 inches in diameter. The 795 conductor is larger than the stated maximum conductor range of the SCH-636, but the test was conducted to see if the SCH-636 would connect to the 795 MCM conductor. In this test the conductor was not wire brushed and anti-oxidant was not used in the connections.

Both the main and tap conductors were positioned through the Hot Line Connector but only one half of an inch of conductor extended out of the connector. The main side of the Hot Line Connector was tightened to 20 foot-pounds (240 inch-pounds) of torque and the tap side of the Hot Line Connector was tightened to 35 foot-pounds (420 inch-pounds) of torque.

Four SCH-636 Hot Line Connectors were used in this test. Thermocouples were placed on the wire entry area of each Hot Line Connector.

The test consisted of 500 cycles; each cycle had a two hour on period and a two hour off period. The test current was raised over the first 25 cycles so the control conductor attained a 100°C temperature rise over ambient temperature.

The test current used was 1035 amperes.

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**RESULTS:**

The Utilco "Power-Grip" Self Cleaning Hot Line Connector SCH-636 successfully completed the ANSI C119.4 Class A Heat Cycle Test using aged 795 MCM AAC (Arbutus) Conductor in the main and tap connections. The connector temperatures did not exceed the temperature of the control conductor, stability was within  $\pm 10$  and the resistance of the connections did not exceed 5 percent of the average resistance.

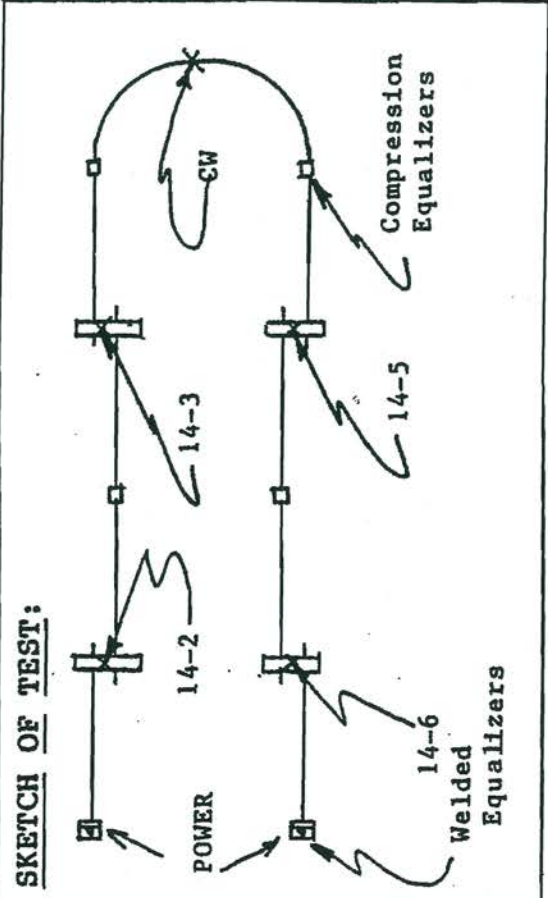
See data sheets and charts attached for the test data.

**INFORMATION:** UTILCO "POWER-GRIP" SELF CLEANING HOT LINE CONNECTOR SCH 636  
TEST SUMMARY

795 MCM AAC (Arbutus) Bare Transmission/Distribution Cable, 37 strand, 1350H19 Alloy aged conductor used; two hours on, two hours off time cycle; Main eyebolt torqued to 20 foot-pounds (240 inch-pounds) and the tap hexagon bolt torqued to 35 foot-pounds (420 inch-pounds); the wires were not wire brushed and anti-oxidant was not used.

ALL TEMPERATURES CENTIGRADED	NUMBER OF CYCLES										AVG. DEV.	
	20	50	77	100	121	163	203	261	329	413		500
AMBIENT	27	26	26	26	25	26	25	25	26	27	27	
CONTROL WIRE	127	127	127	127	127	133	132	133	134	133	134	
LOCATION 14-2	93	92	92	92	92	96	95	96	96	96	97	
DEVIATION	-34	-35	-35	-35	-35	-37	-37	-37	-38	-37	-37	-36
STABILITY	+2	+1	+1	+1	+1	-1	-1	-1	-2	-1	-1	
LOCATION 14-3	106	105	106	106	106	111	111	111	112	112	114	
DEVIATION	-21	-22	-21	-21	-21	-22	-21	-22	-22	-21	-20	-21
STABILITY	0	-1	0	0	0	-1	0	-1	-1	0	+1	
LOCATION 14-5	98	99	100	99	100	104	103	104	105	104	106	
DEVIATION	-29	-28	-27	-28	-27	-29	-29	-29	-29	-29	-28	-28
STABILITY	-1	0	+1	0	+1	-1	-1	-1	-1	-1	0	
LOCATION 14-6	91	91	91	91	91	95	94	95	96	95	96	
DEVIATION	-36	-36	-36	-36	-36	-38	-38	-38	-38	-38	-38	-37
STABILITY	+1	+1	+1	+1	+1	-1	-1	-1	-1	-1	-1	
CURRENT	1035	1045	1025	1025	1025	1025	1025	1045	1025	1025	1055	

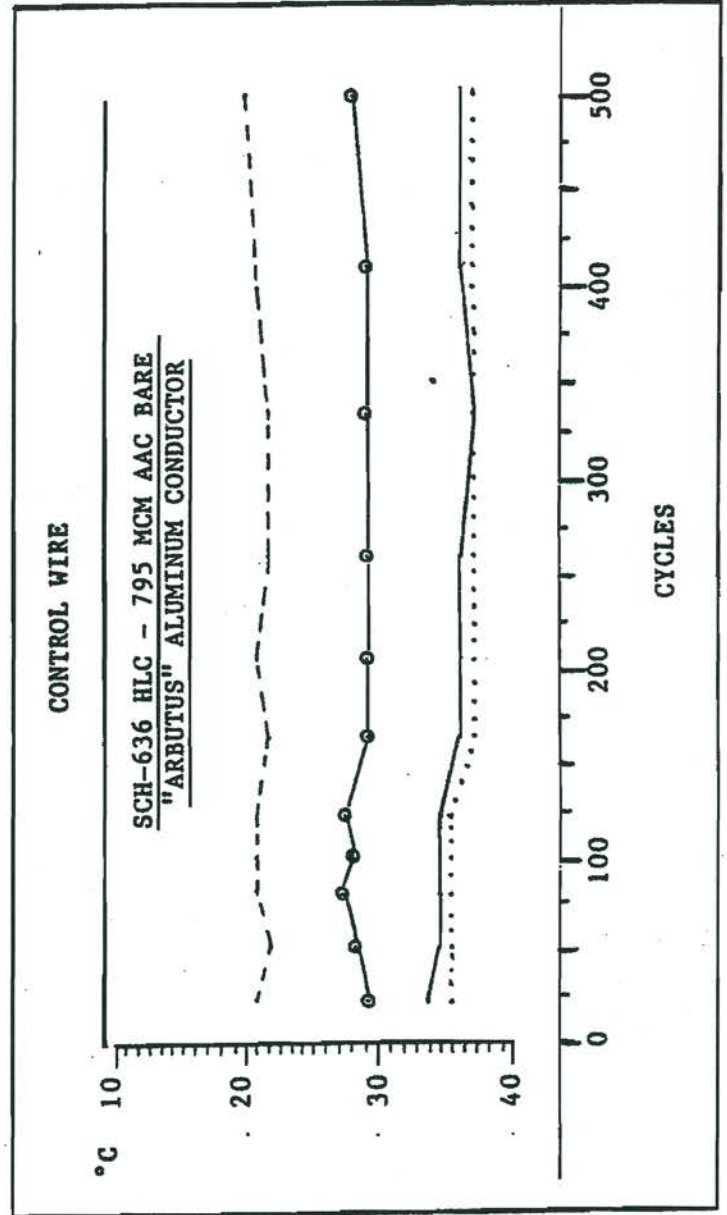
LOCATION NUMBER	MAXIMUM STABILITY FACTOR
14-2	±2
14-3	±1
14-5	±1
14-6	±1



RESIS' IN MIRC. AMS	NUMBER					CYCLES			
	50	77	100	121	163		203	329	413
AMBIENT	24	24	24	24	24	24	24	25	25
RESISTANCE (CW)	136	137	129	133	138	134	137	141	137
RESISTANCE 1 (AMB) 14-2	103	103	105	105	104	107	107	105	106
RESISTANCE 1 (20°C)	101	101	103	103	102	105	105	103	104
RESISTANCE 2 (AMB) 14-3	120	120	122	123	120	121	116	123	126
RESISTANCE 2 (20°C)	118	118	120	121	118	119	114	121	123
RESISTANCE 3 (AMB) 14-5	108	105	110	108	108	108	106	113	109
RESISTANCE 3 (20°C)	106	103	108	106	106	106	104	111	107
RESISTANCE 4 (AMB) 14-6	109	110	110	109	109	109	107	110	110
RESISTANCE 4 (20°C)	107	108	108	107	107	107	105	108	108

	RESISTANCE AVERAGE	RESISTANCE + 5%	RESISTANCE - 5%
RES 3	106.4	111.7	101.1
RES 4	107.4	112.8	102

	RESISTANCE AVERAGE	RESISTANCE + 5%	RESISTANCE - 5%
RES 1	103.2	108.4	98
RES 2	118.9	124.8	113



- LEGEND**
- LOCATION 2 —————
  - LOCATION 3 - - - - -
  - LOCATION 5 e—e—e
  - LOCATION 6 . . . . .