

# NOVASTACK® 35-HDP

Part No. 20697-0\*\*E-0#-#, 20698-0\*\*E-0#

## Test Report

Product Specification no. PRS-2187

9	T25078	October 22, 2025	C.Saito	-	S.Suzuki
8	T25040	May 12, 2025	T.Matsunaga	-	S.Suzuki
7	T24034	June 19, 2024	Y.Fukumoto	-	S.Suzuki
6	T22065	April 25, 2022	H.Lu	Y.Shimizu	M.Takemoto
Rev.	ECN	Date	Prepared by	Checked by	Approved by

## 1. Purpose

To evaluate the performance of NOVASTACK 35-HDP Connector in accordance with PRS-2187.

## 2. Specimen

- (1) NOVASTACK 35-HDP PLUG ASS'Y ( P/N: 20697-0\*\*E-0## )
- (2) NOVASTACK 35-HDP RECEPTACLE ASS'Y ( P/N: 20698-0\*\*E-0# )

## 3. Test Sequence

All the evaluations were performed in accordance with Table 1. Test Sequence.

## 4. Result

See Table 2-1 to 2-4, Graph 1 to 26. For the details of the testing conditions and requirements, see PRS-2187.  
The "n" in the tables show the number of measurement points.

## 5. Conclusion

All the specimens met the requirements of PRS-2187.

**Table 1 Test Sequence and Sample Quantity**

Test Item	Group												
	A	B	C	D	E	F	G	H	J	K	L	M	
Contact Resistance	2,6		1,3,5	1,5	1,3	1,5	1,5,7	1,3	1,3				
Insulation Resistance				2,6		2,6	2,8						
D. W. Voltage				3,7		3,7	3,9						
Temperature Rising												1	
Mating Force	1,5												
Unmating Force	3,7												
Durability	4						4 (10cycles)						
Contact Retention Force		1,3											
Vibration			2										
Shock			4										
Thermal Shock				4									
High Temperature Life		2			2								
Humidity (Steady State)						4							
Humidity (Cycling)							6						
Salt Water Spray								2					
Gas (H <sub>2</sub> S)									2				
Solderability										1			
Soldering Heat Resistance											1		
Sample QTY.	5 pcs.	20 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	10 pcs.	10 pcs.	5 pcs.

※Numbers indicate sequence in which tests are performed.

Table 2-1. Test result

Group	Contents of measurement		Spec.	Unit	Q'ty	n	Data					Judge.			
							AVE.	MAX.	MIN.	S	X±3s				
A	Durability														
	Contact resistance														
	Signal contact	Initial	40	MAX.	mΩ	5	210	15.223	17.22	14.15	0.690	17.293	OK		
		After 30 cycles	ΔR 40	MAX.				0.324	3.78	-2.91	1.568	5.028	OK		
	Power contact	Initial	20	MAX.			20	2.985	3.78	2.47	0.403	4.194	OK		
		After 30 cycles	ΔR 20	MAX.				0.115	0.61	-0.57	0.327	1.096	OK		
	Shell	Initial	20	MAX.			10	9.095	10.17	8.50	0.468	10.499	OK		
		After 30 cycles	ΔR 20	MAX.				1.162	1.78	0.38	0.434	2.464	OK		
	Mating force														
	Signal Contact 16P + Power Contact 4P	Initial	32.0	MAX.			N	5	-	21.498	22.35	20.78	-	-	OK
		After 30 cycles								9.630	10.36	9.04	-	-	OK
	Signal Contact 28P + Power Contact 4P	Initial	32.0	MAX.					-	28.318	29.54	27.35	-	-	OK
		After 30 cycles								11.012	12.12	10.24	-	-	OK
	Signal Contact 34P + Power Contact 4P	Initial	38.0	MAX.					-	30.988	31.80	30.17	-	-	OK
		After 30 cycles			12.738	13.33				12.54	-	-	OK		
	Signal Contact 42P + Power Contact 4P	Initial	46.0	MAX.	-	32.592			33.71	31.51	-	-	OK		
		After 30 cycles				14.194			14.66	13.42	-	-	OK		
	Signal Contact 56P + Power Contact 4P	Initial	60.0	MAX.	-	39.758			42.40	38.37	-	-	OK		
		After 30 cycles				19.596			21.23	18.08	-	-	OK		
	Signal Contact 62P + Power Contact 4P	Initial	66.0	MAX.	-	45.920			47.20	44.10	-	-	OK		
		After 30 cycles				21.840			23.00	21.30	-	-	OK		
	Unmating force														
	Signal Contact 16P + Power Contact 4P	Initial	3.2	MIN.	N	5	-	10.180	10.42	9.99	-	-	OK		
		After 30 cycles						6.456	6.81	5.89	-	-	OK		
Signal Contact 28P + Power Contact 4P	Initial	3.2	MIN.	-			14.360	15.21	13.54	-	-	OK			
	After 30 cycles						10.226	11.32	9.43	-	-	OK			
Signal Contact 34P + Power Contact 4P	Initial	3.8	MIN.	-			15.122	15.91	14.34	-	-	OK			
	After 30 cycles						10.824	11.39	9.99	-	-	OK			
Signal Contact 42P + Power Contact 4P	Initial	4.6	MIN.	-			15.988	17.88	15.13	-	-	OK			
	After 30 cycles						9.942	10.40	9.30	-	-	OK			
Signal Contact 56P + Power Contact 4P	Initial	6.0	MIN.	-			20.800	21.63	20.45	-	-	OK			
	After 30 cycles						13.340	13.93	12.94	-	-	OK			
Signal Contact 62P + Power Contact 4P	Initial	6.6	MIN.	-			18.940	19.60	18.00	-	-	OK			
	After 30 cycles						18.060	19.30	16.50	-	-	OK			
B	Contact retention force														
	Plug														
	Signal contact	Initial	0.6	MIN.	N	-	20	2.52 MIN.					OK		
		After test						2.07 MIN.					OK		
	Power contact	Initial	3.80 MIN.					OK							
		After test	3.92 MIN.					OK							
	Receptacle														
	Signal contact	Initial	0.1	MIN.	N	-	20	0.42 MIN.					OK		
		After test						0.34 MIN.					OK		
	Power contact	Initial	0.53 MIN.					OK							
After test		0.48 MIN.					OK								

\*Appearance Spec.: No abnormality adversely affecting the performance shall occur.

Table 2-2. Test result

C	Vibration → Shock													
	Contact resistance													
	Signal contact	Initial	40	MAX.	mΩ	5	210	15.200	17.04	13.96	0.685	17.255	OK	
		After vibration	ΔR	40				MAX.	-0.500	0.32	-1.31	0.474	0.922	OK
		After shock							-0.505	0.44	-1.39	0.393	0.674	OK
	Power contact	Initial	20	MAX.			20	2.783	3.31	2.18	0.362	3.869	OK	
		After vibration	ΔR	20				MAX.	0.166	0.72	-0.20	0.268	0.970	OK
		After shock							0.324	0.87	-0.29	0.363	1.413	OK
	Shell	Initial	20	MAX.			10	8.145	9.28	7.38	0.585	9.900	OK	
		After vibration	ΔR	20				MAX.	0.149	0.55	-0.20	0.281	0.992	OK
After shock								0.163	0.77	-0.27	0.288	1.027	OK	
Electrical discontinuity														
	During test	1	MAX.	μs	5	-	No discontinuity				OK			
Appearance														
	After test	*		-	5	-	No abnormality				OK			

Group	Contents of measurement	Spec.	Unit	Q'ty	n	Data					Judge.		
						AVE.	MAX.	MIN.	S	X±3s			
D	Thermal shock												
	Contact resistance												
	Signal contact	Initial	40	MAX.	mΩ	5	210	15.962	18.86	13.46	1.198	19.556	OK
		After test	ΔR	40				MAX.	0.769	4.46	-2.70	1.376	4.897
	Power contact	Initial	20	MAX.			20	2.680	3.48	1.67	0.537	4.291	OK
		After test	ΔR	20				MAX.	0.420	1.09	-0.15	0.308	1.344
	Shell	Initial	20	MAX.			10	8.865	9.38	8.45	0.356	9.933	OK
		After test	ΔR	20				MAX.	-0.067	0.61	-0.84	0.413	1.172
	Insulation resistance												
		Initial	1000	MIN.			MΩ	5	-	1.77 x 10 Min.			
	After test	500	MIN.	1.43 x 10 Min.						OK			
Dielectric Withstanding Voltage													
	After test	**		-	5	-	No abnormality				OK		
Appearance													
	After test	*		-	5	-	No abnormality				OK		

E	High temperature life												
	Contact resistance												
	Signal contact	Initial	40	MAX.	mΩ	5	210	15.949	18.73	13.20	1.215	19.594	OK
		After test	ΔR	40				MAX.	0.529	3.44	-2.26	1.110	3.859
	Power contact	Initial	20	MAX.			20	2.718	3.33	2.21	0.363	3.807	OK
		After test	ΔR	20				MAX.	-0.095	0.76	-0.80	0.437	1.216
	Shell	Initial	20	MAX.			10	8.208	8.67	7.46	0.441	9.531	OK
		After test	ΔR	20				MAX.	-0.098	0.75	-0.75	0.465	1.297
	Appearance												
		After test	*				-	5	-	No abnormality			

\*Appearance Spec.: No abnormality adversely affecting the performance shall occur.

\*\*Dielectric Withstanding Voltage Spec.: No abnormalities such as creeping discharge, flashover, insulator breakdown occur.

Table 2-3. Test result

F	Humidity(steady state)												
	Contact resistance												
	Signal contact	Initial	40	MAX.	mΩ	5	210	16.158	18.74	13.94	1.143	19.587	OK
		After test	ΔR	40				MAX.	0.865	3.37	-1.63	1.103	4.174
	Power contact	Initial	20	MAX.			20	2.786	3.62	2.18	0.393	3.965	OK
		After test	ΔR	20				MAX.	0.190	1.13	-0.84	0.582	1.936
	Shell	Initial	20	MAX.			10	8.295	8.78	7.56	0.378	9.429	OK
		After test	ΔR	20				MAX.	-0.186	0.30	-0.91	0.420	1.074
	Insulation resistance												
		Initial	1000	MIN.	MΩ	5	-	1.28 x 1(Min.				OK	
	After test	500	MIN.	1.04 x 1(Min.				OK					
Dielectric Withstanding Voltage													
	After test	**	-	5	-	No abnormality				OK			
Appearance													
	After test	*	-	5	-	No abnormality				OK			

G	Humidity(cycling)													
	Contact resistance													
	Signal contact	Initial	40	MAX.	mΩ	5	210	15.793	17.74	13.74	0.842	18.319	OK	
		After 10cycle	ΔR	40				MAX.	0.719	1.60	-2.52	0.786	1.639	OK
		After test							0.493	2.51	-1.63	0.881	3.136	OK
	Power contact	Initial	20	MAX.			20	2.982	3.70	2.33	0.426	4.260	OK	
		After 10cycle	ΔR	20				MAX.	-0.041	1.29	-1.08	0.643	1.888	OK
		After test							0.114	1.36	-1.18	0.626	1.992	OK
	Shell	Initial	20	MAX.			10	8.164	8.86	7.40	0.399	9.361	OK	
		After 10cycle	ΔR	20				MAX.	-0.070	1.04	-1.31	0.709	2.057	OK
After test		0.134							1.33	-0.46	0.559	1.811	OK	
Insulation resistance														
	Initial	1000	MIN.	MΩ	5	-	1.15 x 1(Min.				OK			
	After test	500	MIN.				1.04 x 1(Min.				OK			
Dielectric Withstanding Voltage														
	After test	**	-	5	-	No abnormality				OK				
Appearance														
	After test	*	-	5	-	No abnormality				OK				

Group	Contents of measurement	Spec.	Unit	Q'ty	n	Data					Judge.		
						AVE.	MAX.	MIN.	S	X±3s			
H	Salt water spray												
	Contact resistance												
	Signal contact	Initial	40	MAX.	mΩ	5	210	15.093	17.07	13.23	0.890	17.763	OK
		After test	ΔR	40				MAX.	0.201	3.68	-3.49	1.670	5.211
	Power contact	Initial	20	MAX.			20	2.952	3.36	2.46	0.255	3.717	OK
		After test	ΔR	20				MAX.	-0.037	0.98	-0.53	0.382	1.109
	Shell	Initial	20	MAX.			10	8.050	8.70	7.55	0.404	9.262	OK
After test		ΔR	20	MAX.				0.036	0.77	-0.61	0.444	1.368	OK
Appearance													
	After test	*	-	5	-	No abnormality				OK			

\*Appearance Spec.: No abnormality adversely affecting the performance shall occur.

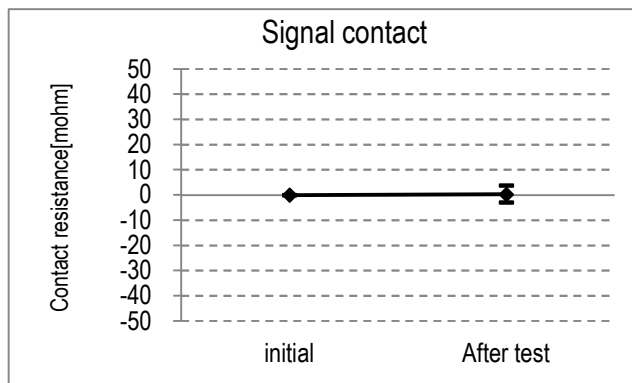
\*\*Dielectric Withstanding Voltage Spec.: No abnormalities such as creeping discharge, flashover, insulator breakdown occur.

**Table 2-4. Test result**

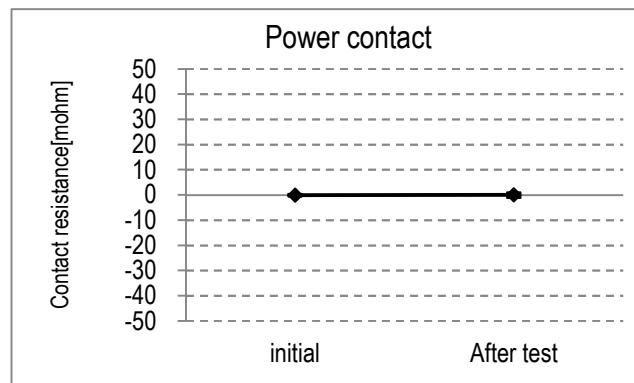
J	Gas												
	Contact resistance												
	Signal contact	Initial	40 MAX.	mΩ	5	210	15.721	17.80	13.61	0.920	18.481	OK	
		After test	ΔR 40 MAX.				0.599	3.41	-2.34	1.115	3.944	OK	
	Power contact	Initial	20 MAX.			20	2.961	3.84	2.24	0.345	3.996	OK	
		After test	ΔR 20 MAX.				-0.124	0.92	-1.06	0.550	1.526	OK	
	Shell	Initial	20 MAX.			10	8.001	8.52	7.50	0.335	9.006	OK	
		After test	ΔR 20 MAX.				0.303	0.96	-0.28	0.418	1.557	OK	
	Appearance												
		After test	*			-	5	-	No abnormality				OK
K	Solder ability												
	Solder wetting area												
	After test	95 MIN.	%	10	-	95 MIN.				OK			
L	Resistance to reflow soldering heat												
	Appearance												
	After test	*	-	10	-	No abnormality				OK			
M	Temperature rising												
	Signal Contact 16P + Power Contact 4P (Signal:0.30A,Power:2.20A)		ΔT 30 MAX.	°C	5	-	8.9 Max.				OK		
	Signal Contact 28P + Power Contact 4P (Signal:0.30A,Power:2.20A)						8.7 Max.				OK		
	Signal Contact 34P + Power Contact 4P (Signal:0.30A,Power:2.20A)						8.7 Max.				OK		
	Signal Contact 42P + Power Contact 4P (Signal:0.29A,Power:2.20A)						8.5 Max.				OK		
	Signal Contact 56P + Power Contact 4P (Signal:0.22A,Power:2.20A)						6.9 Max.				OK		
	Signal Contact 62P + Power Contact 4P (Signal:0.19A,Power:2.20A)						5.8 Max.				OK		

\*Appearance Spec.: No abnormality adversely affecting the performance shall occur.

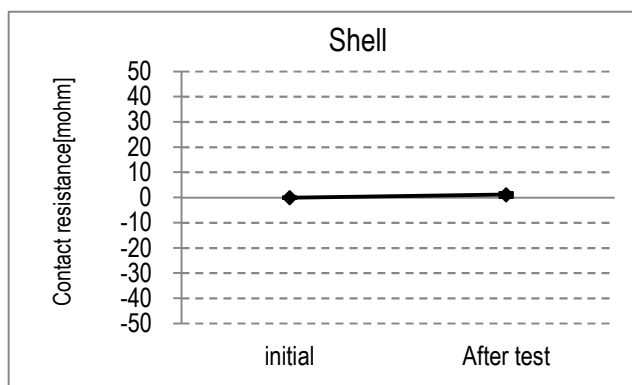
## A Group / Durability



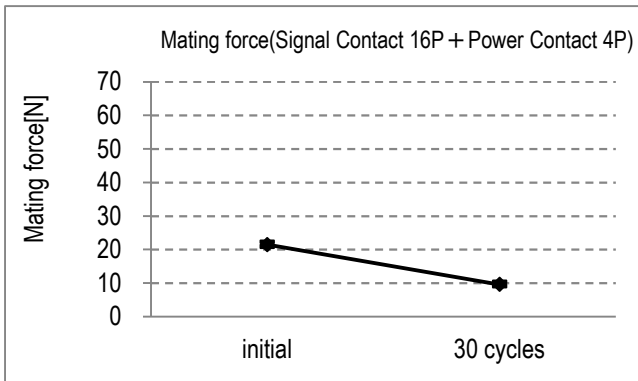
Graph-1. A change of signal contact resistance



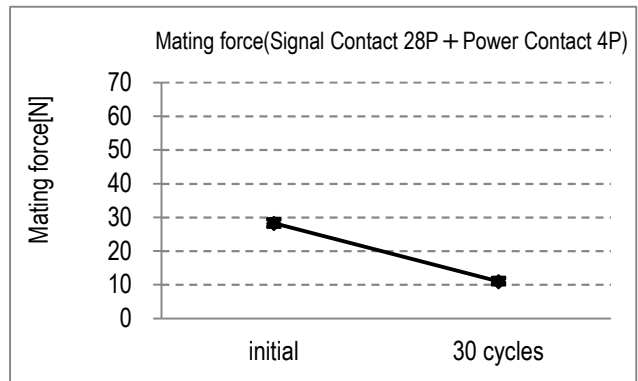
Graph-2. A change of power contact resistance



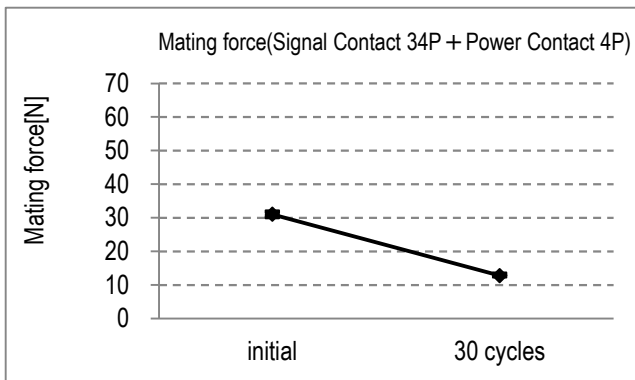
Graph-3. A change of Shell contact resistance



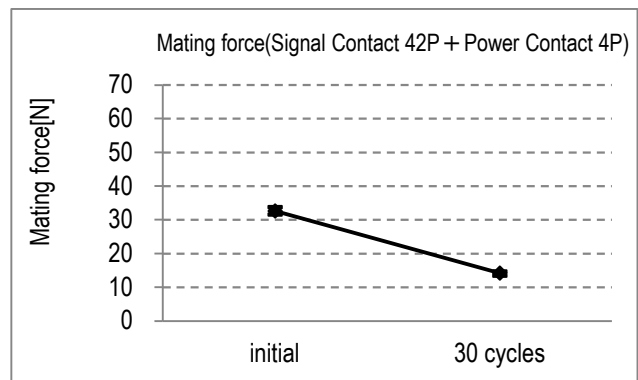
Graph-4-1. A change of mating force Signal Contact 16P + Power Contact 4P



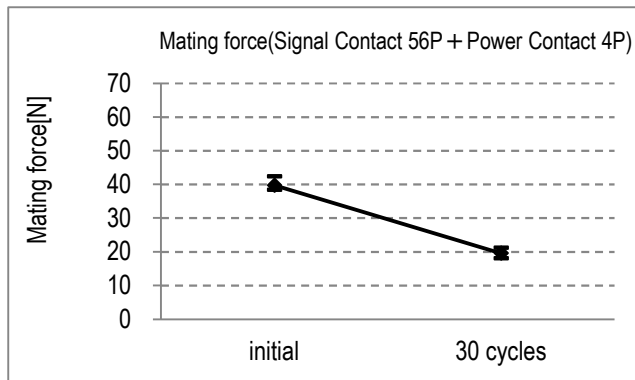
Graph-4-2. A change of mating force Signal Contact 28P + Power Contact 4P



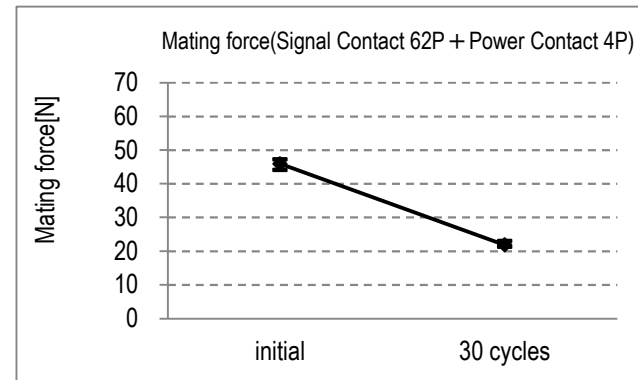
Graph-4-1. A change of mating force Signal Contact 34P + Power Contact 4P



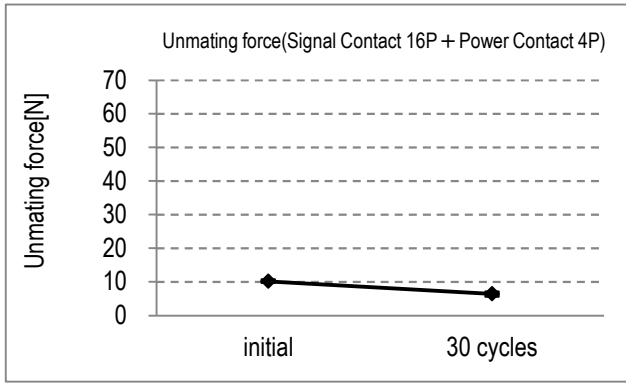
Graph-4-2. A change of mating force Signal Contact 42P + Power Contact 4P



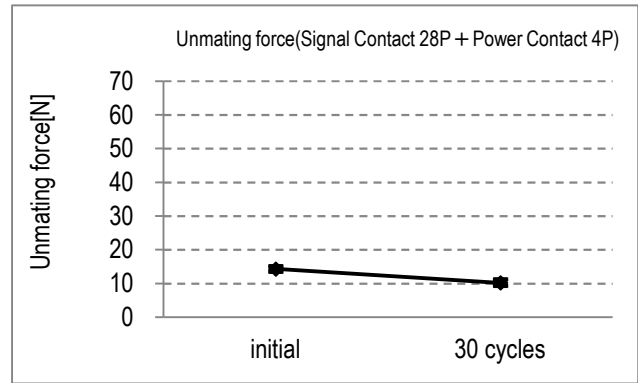
Graph-4-1. A change of mating force Signal Contact 56P + Power Contact 4P



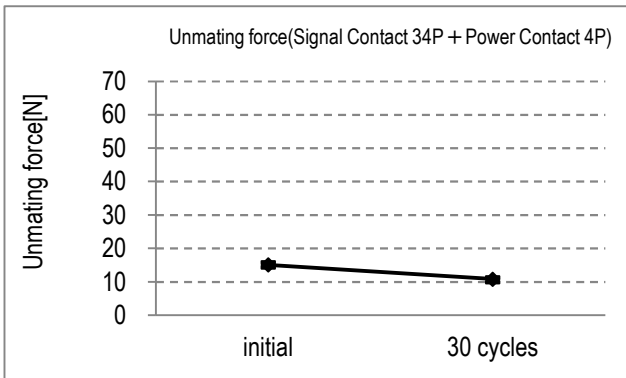
Graph-4-2. A change of mating force Signal Contact 62P + Power Contact 4P



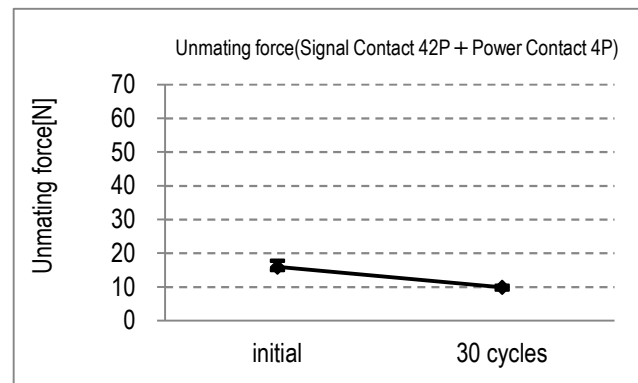
Graph-4-1. A change of unmating force Signal Contact 16P + Power Contact 4P



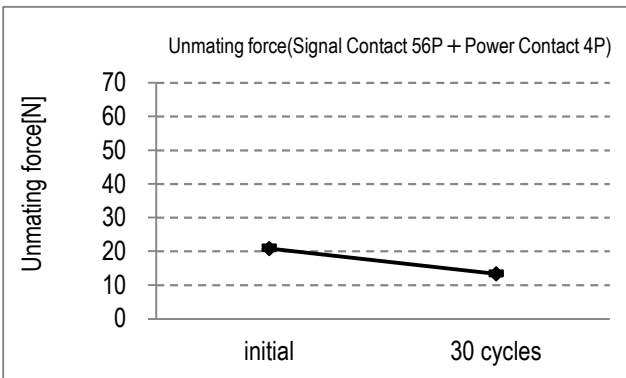
Graph-4-2. A change of unmating force Signal Contact 28P + Power Contact 4P



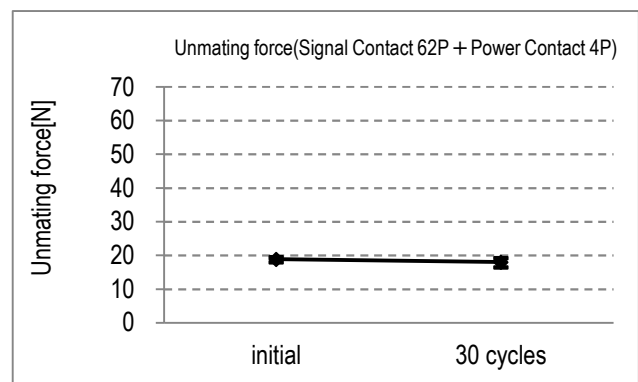
Graph-4-1. A change of unmating force Signal Contact 34P + Power Contact 4P



Graph-4-2. A change of unmating force Signal Contact 42P + Power Contact 4P

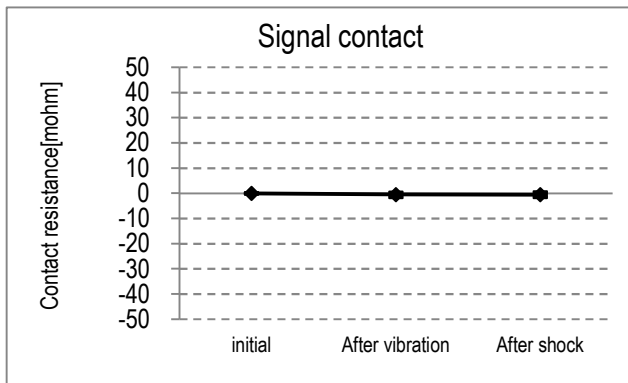


Graph-4-1. A change of unmating force Signal Contact 56P + Power Contact 4P

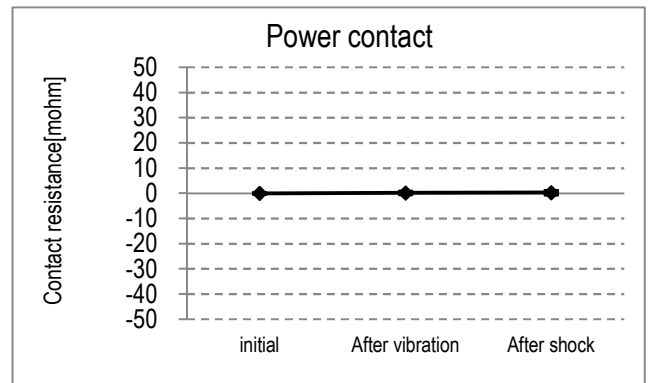


Graph-4-2. A change of unmating force Signal Contact 62P + Power Contact 4P

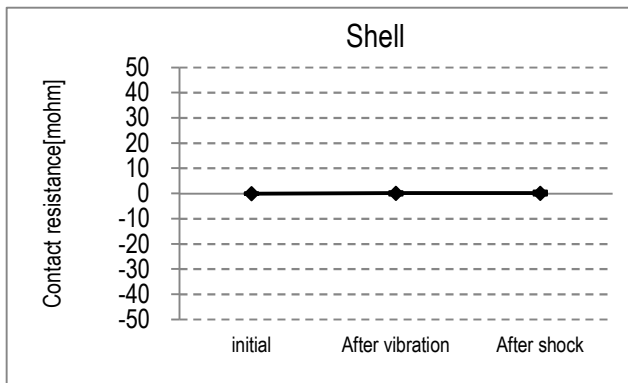
## C Group / Vibration → Shock



Graph-6. A change of signal contact resistance

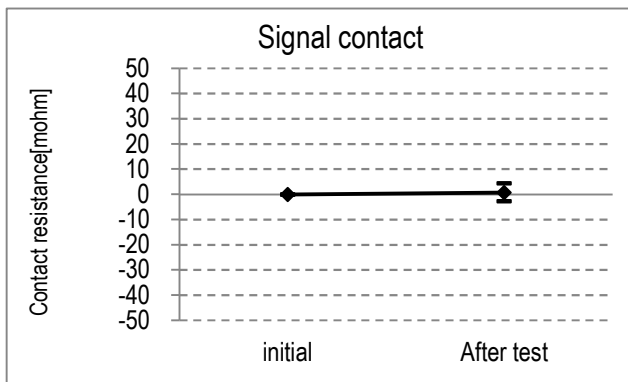


Graph-7. A change of power contact resistance

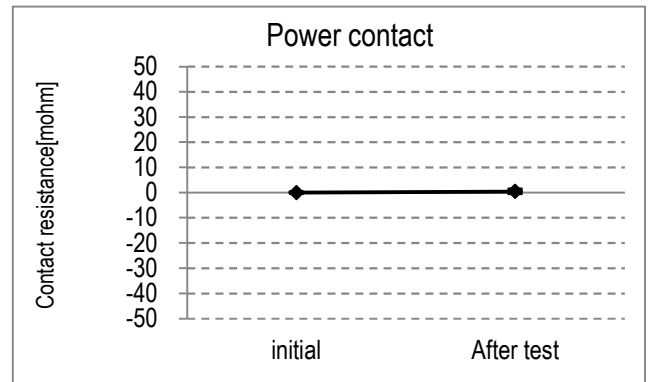


Graph-8. A change of Shell contact resistance

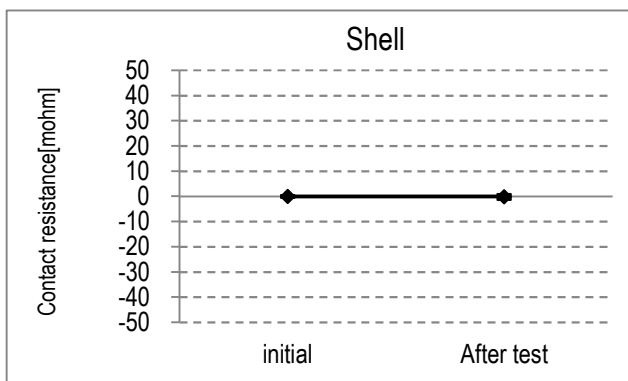
## D Group / Thermal Shock



Graph-9. A change of signal contact resistance

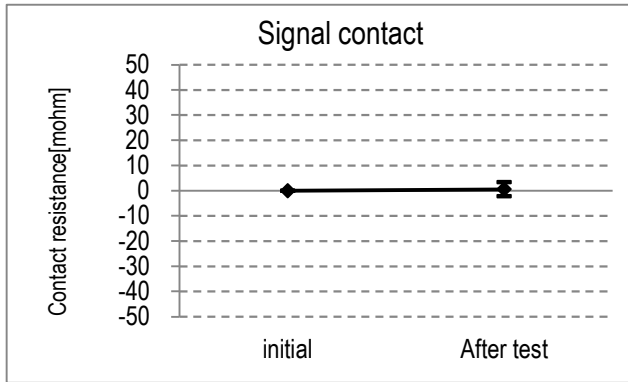


Graph-10. A change of power contact resistance

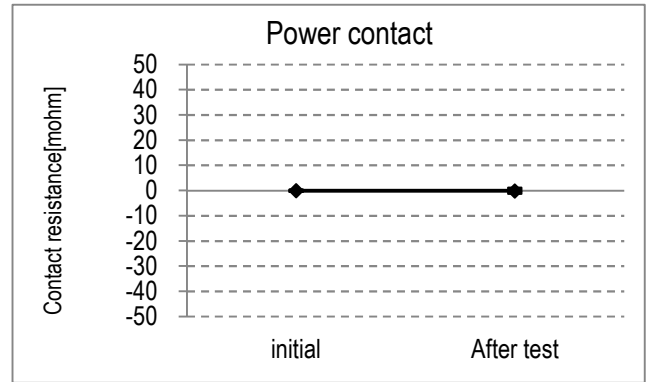


Graph-11. A change of Shell contact resistance

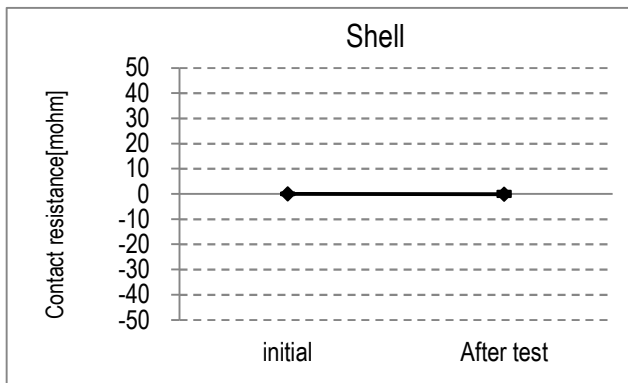
## E Group / High Temperature Life



Graph-12. A change of signal contact resistance

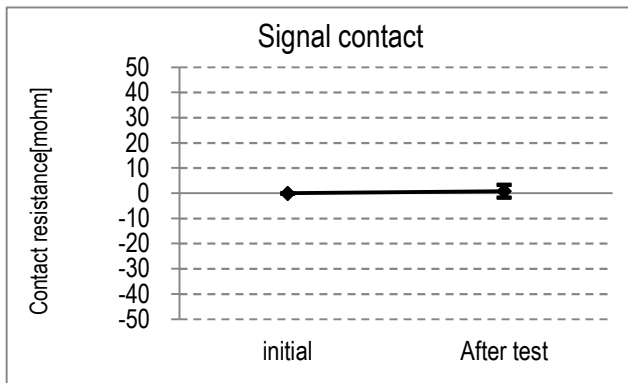


Graph-13. A change of power contact resistance

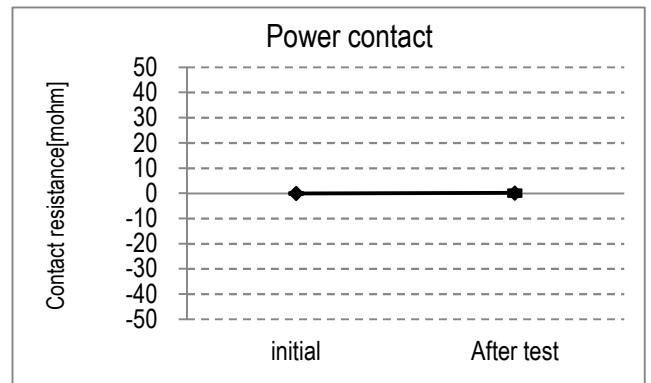


Graph-14. A change of Shell contact resistance

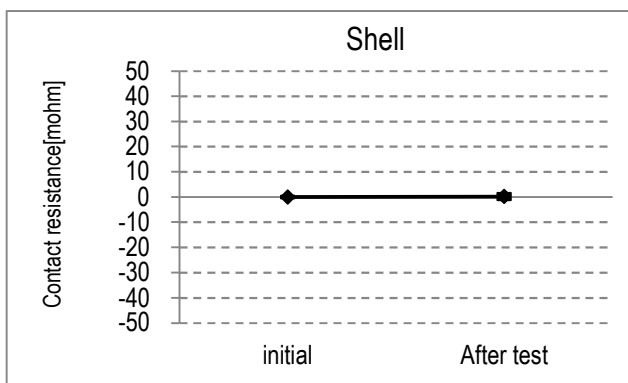
## F Group / Humidity (Steady State)



Graph-15. A change of signal contact resistance

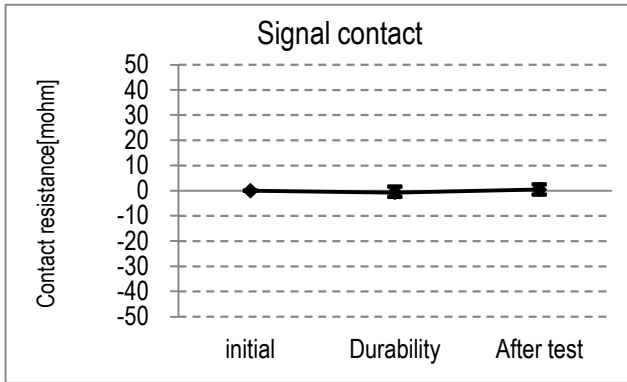


Graph-16. A change of power contact resistance

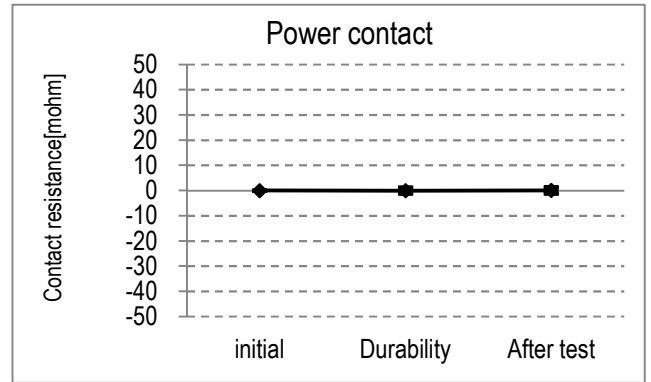


Graph-17. A change of Shell contact resistance

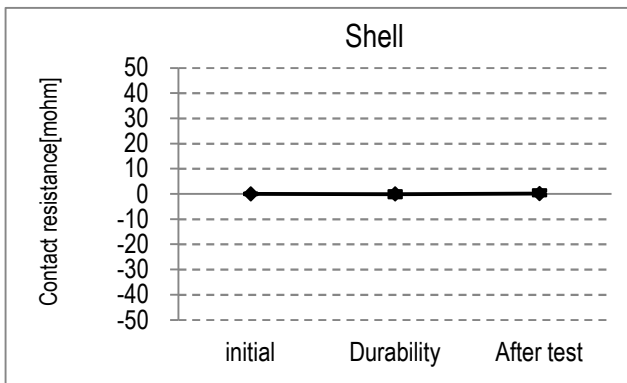
## G Group / Humidity (Cycling)



Graph-18. A change of signal contact resistance

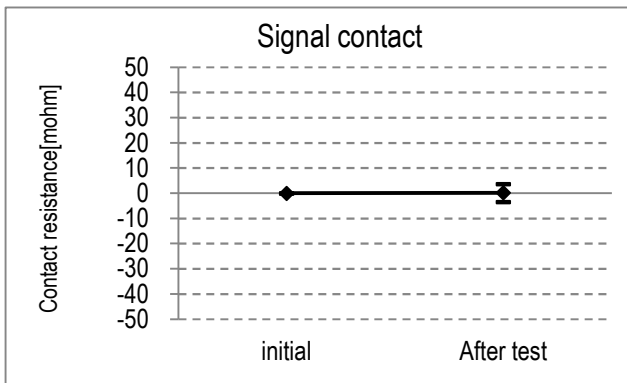


Graph-19. A change of power contact resistance

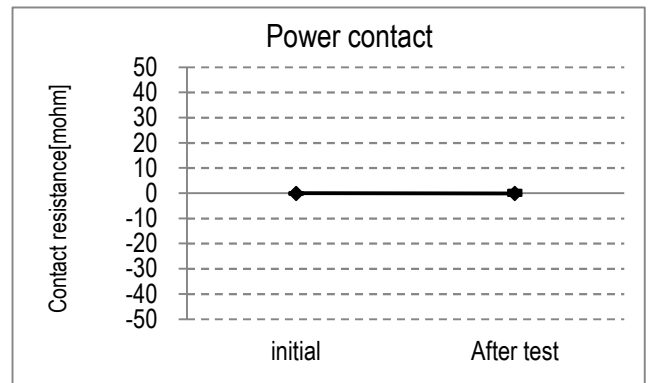


Graph-20. A change of Shell contact resistance

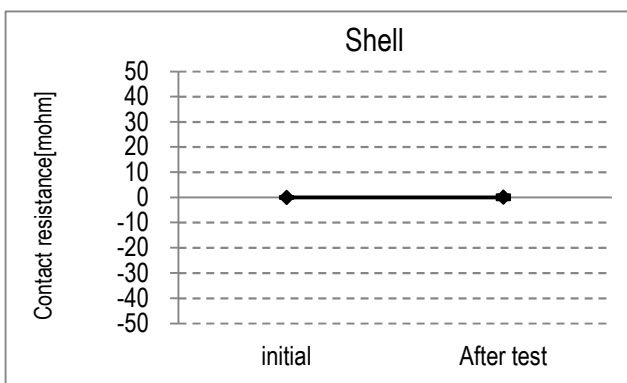
## H Group / Salt Water Spray



Graph-21. A change of signal contact resistance

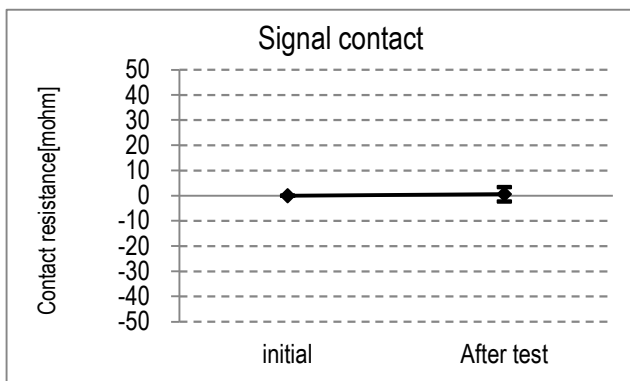


Graph-22. A change of power contact resistance

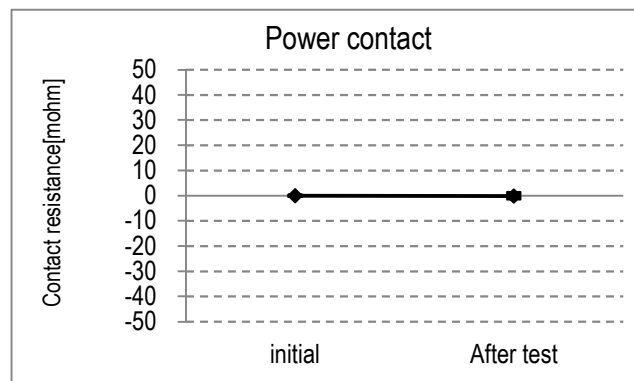


Graph-23. A change of Shell contact resistance

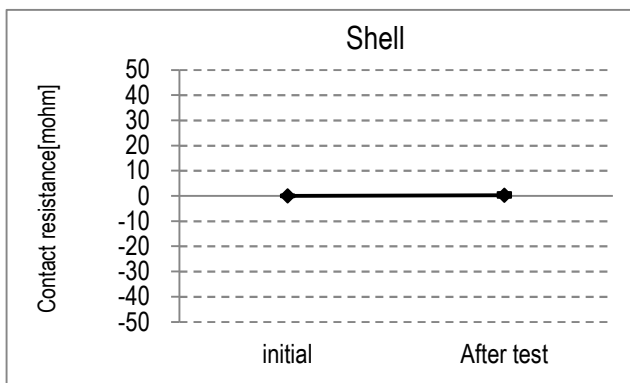
J Group / Gas



Graph-24. A change of signal contact resistance



Graph-25. A change of power contact resistance



Graph-26. A change of Shell contact resistance