

MINIFLEX® 3-BFN LK TYPE

Part No. 20599-0**E-01

Test Report

Product Specification no. PRS-1861

4	T21154	January 11, 2022	S.Shigekoshi	M.Muro	H.Ikari
3	T19110	September 27, 2019	S.Shigekoshi	M.Muro	H.Ikari
2	T16028	February 23, 2016	M.I		Y.S
1	T15137	September 3, 2015	R.T		E.K
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of MINIFLEX 3-BFN Connector LK TYPE in accordance with PRS-1861.

2. Specimen

(1) Connector : MINIFLEX 3-BFN Conn. LK TYPE・・・ P/N 20599-0**E-01

(2) FPC : Made by Taiyo Industrial Co.,Ltd)

FPC Thickness : $t=0.20\pm0.03$ (Actual measurement : 0.19~0.20mm)

3. Test Sequence

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

4. Result

See Table 2-1 to 2-9, Graph 1 to 17. For the details of the testing conditions and requirements, see PRS-1861.

The “n” in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-1861.

Table1 Test Sequence

Test Items	Group															
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
C/T Resistance	2,7			1,3, 5	1,3	1,3	1,3	1,5	1,5	1,3	1,3	1,3	1,3			
D.W.Voltage								2,6	2,6							
Insulation Resistance								3,7	3,7							
Temp. rising																1
Act Locking Force	1,5															
Act Un-locking Force	3,6															
FPC Retention Force		1,3														
Durability	4	2														
C/T & Lock Retention Force			1													
Vibration				2												
Shock				4												
Fretting corrosion					2											
Thermal Shock						2										
High Temp. Life							2									
High Temp & High Hum energizing								4								
High Temp & High Hum Life									4							
Cold Temp. Life										2						
Gas (H ₂ S)											2					
Gas (SO ₂)												2				
Salt Water Spray													2			
Solderability														1		
Soldering Heat Resist.															1	

Table2-1 Test Result

Test Item	Measurement			Spec.	Set	n	Data					Judge
							AVE.(X)	MAX.	MIN.	s	X±3s	
A Group Durability	Contact Resistance (mΩ)	※T	Initial	60mΩ MAX.	5	165	23.942	29.97	19.00	3.532	34.538	○
			After 20th	Δ R=40mΩ MAX.			0.197	3.55	-3.46	1.649	5.144	○
		※B	Initial	60mΩ MAX.	5	165	15.021	18.91	11.01	2.237	21.732	○
			After 20th	Δ R=40mΩ MAX.			1.146	4.68	-1.71	1.392	5.322	○
	Act Locking Force (N)	9P	Initial	3.30N MAX. (0.30N/Pos.× (9+2)P)	5	5	1.254	1.34	1.18	0.062	1.440	○
			After 20th				1.019	1.08	0.96	0.046	1.157	○
		11P	Initial	3.90N MAX. (0.30N/Pos.× (11+2)P)	5	5	1.508	1.56	1.44	0.057	1.679	○
			After 20th				1.280	1.31	1.24	0.027	1.361	○
		13P	Initial	4.50 N MAX. (0.30N/Pos.× (13+2)P)	5	5	1.832	1.94	1.71	0.087	2.093	○
			After 20th				1.458	1.56	1.35	0.102	1.764	○
		15P	Initial	5.10 N MAX. (0.30N/Pos.× (15+2)P)	5	5	2.151	2.21	2.07	0.057	2.322	○
			After 20th				1.657	1.76	1.58	0.073	1.876	○
		17P	Initial	5.70N MAX. (0.30N/Pos.× (17+2)P)	5	5	2.437	2.60	2.30	0.136	2.845	○
			After 20th				1.951	2.01	1.85	0.073	2.170	○
		19P	Initial	6.30N MAX. (0.30N/Pos.× (19+2)P)	5	5	2.765	2.90	2.68	0.089	3.032	○
			After 20th				2.155	2.28	2.11	0.072	2.371	○
		21P	Initial	6.90N MAX. (0.30N/Pos.× (21+2)P)	5	5	2.946	3.01	2.89	0.050	3.096	○
			After 20th				2.313	2.38	2.26	0.057	2.484	○
		23P	Initial	7.50N MAX. (0.30N/Pos.× (23+2)P)	5	5	3.215	3.33	3.14	0.076	3.443	○
			After 20th				2.524	2.58	2.43	0.058	2.698	○
		25P	Initial	8.10N MAX. (0.30N/Pos.× (25+2)P)	5	5	3.560	3.60	3.49	0.044	3.692	○
			After 20th				2.823	2.85	2.78	0.030	2.913	○
		27P	Initial	8.70N MAX. (0.30N/Pos.× (27+2)P)	5	5	4.041	4.21	3.92	0.122	4.407	○
			After 20th				3.334	3.47	3.03	0.178	3.868	○
		29P	Initial	9.30N MAX. (0.30N/Pos.× (29+2)P)	5	5	4.100	4.18	4.04	0.058	4.274	○
			After 20th				3.317	3.43	3.25	0.073	3.536	○

※T : Top Contact B : Bottom Contact

Table2-2 Test Result

Test Item	Measurement			Spec.	Set	n	Data					Judge
							AVE.(X)	MAX.	MIN.	s	X±3s	
A Group Durability	Act Locking Force (N)	31P	Initial	9.90N MAX. (0.30N/Pos.× (31+2)P)	5	5	4.496	4.56	4.43	0.057	4.667	○
			20th cycles				3.395	3.45	3.31	0.051	3.548	○
		33P	Initial	10.50N MAX. (0.30N/Pos.× (33+2)P)	5	5	4.880	5.00	4.63	0.146	5.318	○
			20th cycles				3.769	3.85	3.67	0.086	4.027	○
		35P	Initial	11.10N MAX. (0.30N/Pos.× (35+2)P)	5	5	5.013	5.08	4.91	0.087	5.274	○
			20th cycles				4.013	4.06	3.95	0.055	4.178	○
		37P	Initial	11.70N MAX. (0.30N/Pos.× (37+2)P)	5	5	5.291	5.38	5.22	0.059	5.468	○
			20th cycles				4.220	4.27	4.19	0.031	4.313	○
	Act Un-locking Force (N)	9P	Initial	0.22N MIN. (0.02N/Pos.× (9+2)P)	5	5	0.838	0.88	0.79	0.040	0.718	○
			20th cycles				0.816	0.91	0.65	0.106	0.498	○
		11P	Initial	0.26N MIN. (0.02N/Pos.× (11+2)P)	5	5	1.027	1.10	0.97	0.053	0.868	○
			20th cycles				0.919	0.99	0.86	0.062	0.733	○
		13P	Initial	0.30N MIN. (0.02N/Pos.× (13+2)P)	5	5	1.240	1.29	1.15	0.059	1.063	○
			20th cycles				1.148	1.29	1.00	0.116	0.800	○
		15P	Initial	0.34N MIN. (0.02N/Pos.× (15+2)P)	5	5	1.414	1.47	1.35	0.056	1.246	○
			20th cycles				1.356	1.46	1.27	0.076	1.128	○
		17P	Initial	0.38N MIN. (0.02N/Pos.× (17+2)P)	5	5	1.551	1.68	1.39	0.127	1.170	○
			20th cycles				1.426	1.59	1.25	0.162	0.940	○
		19P	Initial	0.42N MIN. (0.02N/Pos.× (19+2)P)	5	5	1.706	1.75	1.67	0.038	1.592	○
			20th cycles				1.604	1.63	1.56	0.034	1.502	○
		21P	Initial	0.46N MIN. (0.02N/Pos.× (21+2)P)	5	5	1.978	2.03	1.96	0.031	1.885	○
			20th cycles				1.785	1.86	1.71	0.068	1.581	○
		23P	Initial	0.50N MIN. (0.02N/Pos.× (23+2)P)	5	5	2.133	2.19	2.05	0.061	1.950	○
			20th cycles				1.967	2.05	1.85	0.077	1.736	○
		25P	Initial	0.54N MIN. (0.02N/Pos.× (25+2)P)	5	5	2.372	2.40	2.33	0.028	2.288	○
			20th cycles				2.042	2.10	1.99	0.048	1.898	○

Table2-3 Test Result

Test Item	Measurement			Spec.	Set	n	Data					Judge
							AVE.(X)	MAX.	MIN.	s	X±3s	
A Group Durability	Act Un-locking Force (N)	27P	Initial	0.58N MIN. (0.02N/Pos.× (27+2)P)	5	5	2.392	2.54	2.30	0.105	2.077	○
			20th cycles	2.132			2.30	2.00	0.131	1.739	○	
		29P	Initial	0.62N MIN. (0.02N/Pos.× (29+2)P)	5	5	2.717	2.76	2.69	0.036	2.609	○
			20th cycles	2.213			2.30	2.13	0.074	1.991	○	
		31P	Initial	0.66N MIN. (0.02N/Pos.× (31+2)P)	5	5	2.929	2.97	2.86	0.043	2.800	○
			20th cycles	2.546			2.64	2.41	0.089	2.279	○	
		33P	Initial	0.70N MIN. (0.02N/Pos.× (33+2)P)	5	5	2.771	3.08	2.50	0.284	1.919	○
			20th cycles	2.264			2.37	2.16	0.097	1.973	○	
		35P	Initial	0.74N MIN. (0.02N/Pos.× (35+2)P)	5	5	3.210	3.34	3.12	0.094	2.928	○
			20th cycles	2.986			3.08	2.93	0.068	2.782	○	
		37P	Initial	0.78N MIN. (0.02N/Pos.× (37+2)P)	5	5	3.503	3.60	3.41	0.075	3.278	○
			20th cycles	3.194			3.35	3.06	0.103	2.885	○	
B Group FPC Retention Force(N)	9P	Initial	2.17N MIN. (0.13N/Pos.× 9P+1.0N)	5	5	8.200	8.32	8.08	0.104	7.888	○	
		20th cycles	1.90N MIN. (0.10N/Pos.× 9P+1.0N)			7.481	7.61	7.31	0.123	7.112	○	
	11P	Initial	2.43N MIN. (0.13N/Pos.× 11P+1.0N)	5	5	8.811	8.94	8.72	0.116	8.463	○	
		20th cycles	2.10N MIN. (0.10N/Pos.× 11P+1.0N)			8.118	8.36	7.97	0.154	7.656	○	
	13P	Initial	2.69N MIN. (0.13N/Pos.× 13P+1.0N)	5	5	9.489	9.64	9.31	0.122	9.123	○	
		20th cycles	2.30N MIN. (0.10N/Pos.× 13P+1.0N)			8.738	8.75	8.72	0.014	8.696	○	
	15P	Initial	2.95N MIN. (0.13N/Pos.× 15P+1.0N)	5	5	10.240	10.31	10.18	0.046	10.102	○	
		20th cycles	2.50N MIN. (0.10N/Pos.× 15P+1.0N)			9.228	9.40	8.88	0.211	8.595	○	
	17P	Initial	3.21N MIN. (0.13N/Pos.× 17P+1.0N)	5	5	10.500	10.77	10.07	0.270	9.690	○	
		20th cycles	2.70N MIN. (0.10N/Pos.× 17P+1.0N)			9.695	9.81	9.61	0.075	9.470	○	

Table 2-4 Test Result

Test Item	Measurement		Spec.	Set	n	Data					Judge
						AVE.(X)	MAX.	MIN.	s	X±3s	
B Group FPC Retention Force(N)	19P	Initial	3.47N MIN. (0.13N/Pos.× 19P+1.0N)	5	5	11.337	11.88	10.24	0.642	9.411	○
		20th cycles	2.90N MIN. (0.10N/Pos.× 19P+1.0N)			10.200	10.58	9.92	0.312	9.264	○
	21P	Initial	3.73N MIN. (0.13N/Pos.× 21P+1.0N)	5	5	12.106	12.17	12.04	0.057	11.935	○
		20th cycles	3.10N MIN. (0.10N/Pos.× 21P+1.0N)			10.541	10.86	10.45	0.176	10.013	○
	23P	Initial	3.99N MIN. (0.13N/Pos.× 23P+1.0N)	5	5	12.366	12.57	12.04	0.266	11.568	○
		20th cycles	3.30N MIN. (0.10N/Pos.× 23P+1.0N)			10.945	11.36	10.75	0.236	10.237	○
	25P	Initial	4.25N MIN. (0.13N/Pos.× 25P+1.0N)	5	5	12.746	12.95	12.47	0.227	12.065	○
		20th cycles	3.50N MIN. (0.10N/Pos.× 25P+1.0N)			11.301	11.66	11.07	0.215	10.656	○
	27P	Initial	4.51N MIN. (0.13N/Pos.× 27P+1.0N)	5	5	13.411	13.71	12.99	0.281	12.568	○
		20th cycles	3.70N MIN. (0.10N/Pos.× 27P+1.0N)			11.787	12.11	11.43	0.312	10.851	○
	29P	Initial	4.77N MIN. (0.13N/Pos.× 29P+1.0N)	5	5	14.010	14.36	13.54	0.312	13.074	○
		20th cycles	3.90N MIN. (0.10N/Pos.× 29P+1.0N)			12.359	12.74	12.06	0.335	11.354	○
	31P	Initial	5.03N MIN. (0.13N/Pos.× 31P+1.0N)	5	5	14.591	14.87	14.13	0.293	13.712	○
		20th cycles	4.10N MIN. (0.10N/Pos.× 31P+1.0N)			12.919	13.30	12.33	0.402	11.713	○
	33P	Initial	5.29N MIN. (0.13N/Pos.× 33P+1.0N)	5	5	15.250	15.55	14.91	0.256	14.482	○
		20th cycles	4.30N MIN. (0.10N/Pos.× 33P+1.0N)			13.596	13.76	13.50	0.126	13.218	○
	35P	Initial	5.55N MIN. (0.13N/Pos.× 35P+1.0N)	5	5	15.850	16.19	15.47	0.281	15.007	○
		20th cycles	4.50N MIN. (0.10N/Pos.× 35P+1.0N)			14.146	14.31	13.90	0.170	13.636	○

Table 2-5 Test Result

Test Item	Measurement		Spec.	Set	n	Data					Judge		
						AVE.(X)	MAX.	MIN.	s	X±3s			
B Group FPC Retention Force(N)	37P	初期	5.81N MIN. (0.13N/Pos.× 37P+1.0N)	5	5	16.427	16.70	16.04	0.264	15.635	○		
		20 回目	4.70N MIN. (0.10N/Pos.× 37P+1.0N)			14.674	14.91	14.41	0.179	14.137	○		
C Group	C/T		0.3N MIN.	5	30	1.166	1.28	1.03	0.086	0.908	○		
Retention Force	Lock			5	10	1.039	1.12	0.96	0.052	0.883	○		
D Group Vibration Shock	Contact Resistance (m Ω)	※T	Initial	60m Ω MAX.	5	165	23.713	29.96	19.01	3.557	34.384	○	
			After Vibration				Δ R=40m Ω MAX.	0.178	3.77	-3.63	1.645	5.113	○
			After Shock					0.372	3.80	-3.40	1.649	5.319	○
		※B	Initial	60m Ω MAX.	5	165	15.064	18.93	11.02	2.316	22.012	○	
			After Vibration				Δ R=40m Ω MAX.	1.145	4.87	-1.73	1.441	5.468	○
			After Shock					1.072	4.52	-1.75	1.426	5.350	○
	Discontinuity	In Vibration	1 μ sec. MAX.	10	10	No Discontinuity					○		
		In Shock				No Discontinuity					○		
	Appearance	After Vibration	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○		
		After Shock				No Abnormality					○		

※T : Top Contact B : Bottom Contact

Table 2-6 Test Result

Test Item	Measurement			Spec.	Set	n	Data					Judge
							AVE.(X)	MAX.	MIN.	s	X±3s	
E Group Fretting corrosion	Contact Resistance (mΩ)	※T	Initial	60mΩ MAX.	5	165	23.707	29.98	19.05	3.403	33.916	○
			After Test	Δ R=40mΩ MAX.			0.528	3.54	-3.70	1.656	5.496	○
		※B	Initial	60mΩ MAX.	5	165	14.889	18.98	11.00	2.225	21.564	○
			After Test	Δ R=40mΩ MAX.			1.287	4.64	-1.85	1.366	5.385	○
	Discontinuity		In Test	1 μ sec. MAX.	10	10	No Discontinuity					○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○
F Group Thermal Shock	Contact Resistance (mΩ)	※T	Initial	60mΩ MAX.	5	165	23.939	29.95	19.01	3.441	34.262	○
			After Test	Δ R=40mΩ MAX.			0.212	3.72	-3.69	1.698	5.306	○
		※B	Initial	60mΩ MAX.	5	165	14.958	18.89	11.01	2.365	22.053	○
			After Test	Δ R=40mΩ MAX.			1.285	4.56	-1.68	1.295	5.170	○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○
G Group High Temp. Life	Contact Resistance (mΩ)	※T	Initial	60mΩ MAX.	5	165	23.763	29.95	19.01	3.549	34.410	○
			After Test	Δ R=40mΩ MAX.			0.659	4.07	-3.73	1.718	5.813	○
		※B	Initial	60mΩ MAX.	5	165	15.080	18.83	11.01	2.283	21.929	○
			After Test	Δ R=40mΩ MAX.			1.030	4.45	-1.93	1.417	5.281	○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○

※T : Top Contact B : Bottom Contact

MINIFLEX 3-BFN LK TYPE Test Report

Document No.
TR-13085-04EN

Table 2-7 Test Result

Test Item	Measurement			Spec.	Set	N	Data					Judge
							AVE.(X)	MAX.	MIN.	s	X±3s	
H Group High Temp. & High Hum. energizing	Contact Resistance (mΩ)	※T	Initial	60mΩ MAX.	5	165	23.835	29.84	19.01	3.529	34.422	○
			After Test	Δ R=40mΩ MAX.			0.590	4.46	-2.72	1.689	5.657	○
		※B	Initial	60mΩ MAX.	5	165	14.819	18.86	11.01	2.343	21.848	○
			After Test	Δ R=40mΩ MAX.			1.327	4.71	-1.62	1.375	5.452	○
	D.W.Voltage	※T	Initial	No abnormalities such as creeping discharge, flashover, insulator breakdown occur	5	160	No Abnormality					○
			After Test				No Abnormality					○
		※B	Initial		5	160	No Abnormality					○
			After Test				No Abnormality					○
	Insulation Resistance (MΩ)	※T	Initial	100MΩ MIN	5	160	MIN. 5.0×10 ⁵ MΩ					○
			After Test				MIN. 1.0×10 ⁵ MΩ					○
		※B	Initial		5	160	MIN. 4.0×10 ⁵ MΩ					○
			After Test				MIN. 2.5×10 ⁵ MΩ					○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○

※T : Top Contact B : Bottom Contact

Table 2-8 Test Result

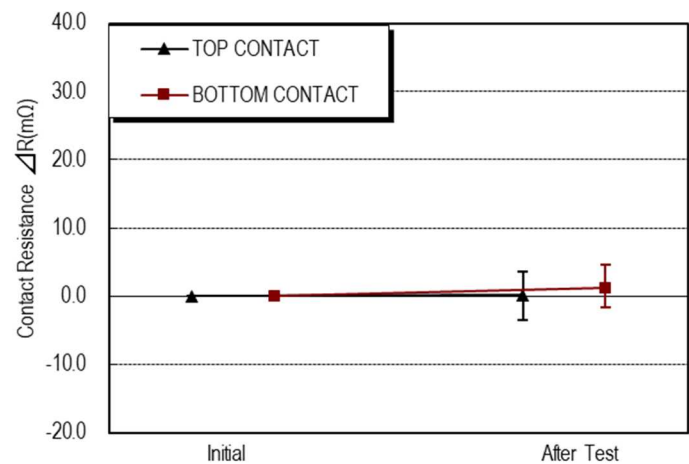
Test Item	Measurement			Spec.	Set	N	Data					Judge
							AVE.(X)	MAX.	MIN.	s	X±3s	
J Group High Temp. & High Hum. Life	Contact Resistance (mΩ)	※T	Initial	60mΩ MAX.	5	165	23.815	29.98	19.01	3.637	34.726	○
			After Test	Δ R=40mΩ MAX.			0.550	4.76	-3.65	1.774	5.872	○
		※B	Initial	60mΩ MAX.	5	165	15.024	19.00	11.13	2.349	22.071	○
			After Test	Δ R=40mΩ MAX.			1.182	4.93	-1.69	1.426	5.460	○
	D.W.Voltage	※T	Initial	No abnormalities such as creeping discharge, flashover, insulator breakdown occur	5	160	No Abnormality					○
			After Test				No Abnormality					○
		※B	Initial		5	160	No Abnormality					○
			After Test				No Abnormality					○
	Insulation Resistance (MΩ)	※T	Initial	100MΩ MIN	5	160	MIN. 5.0×10 ⁴ MΩ					○
			After Test				MIN. 1.5×10 ⁴ MΩ					○
		※B	Initial		5	160	MIN. 5.0×10 ⁴ MΩ					○
			After Test				MIN. 1.0×10 ⁴ MΩ					○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○
K Group Cold Temp. Life	Contact Resistance (mΩ)	※T	Initial	60mΩ MAX.	5	165	23.890	29.95	19.11	3.535	34.495	○
			After Test	Δ R=40mΩ MAX.			0.474	4.64	-3.69	1.817	5.925	○
		※B	Initial	60mΩ MAX.	5	165	14.985	18.93	11.14	2.242	21.711	○
			After Test	Δ R=40mΩ MAX.			1.265	4.75	-1.74	1.413	5.504	○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	5	5	No Abnormality					○
L Group Gas(H ₂ S)	Contact Resistance (mΩ)	※T	Initial	60mΩ MAX.	5	165	23.680	29.97	19.03	3.533	34.279	○
			After Test	Δ R=40mΩ MAX.			0.750	4.78	-3.51	1.673	5.769	○
		※B	Initial	60mΩ MAX.	5	165	14.918	19.00	11.14	2.400	22.118	○
			After Test	Δ R=40mΩ MAX.			1.256	4.51	-1.75	1.473	5.675	○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○

※T : Top Contact B : Bottom Contact

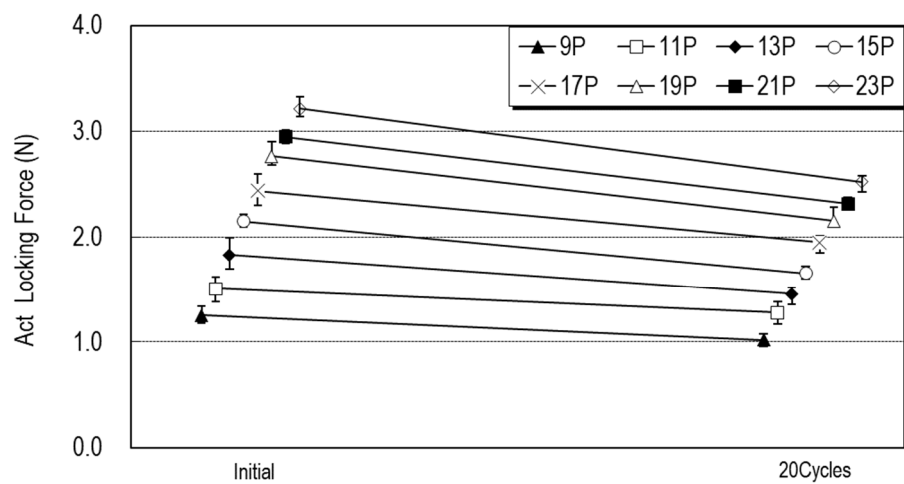
Table 2-9 Test Result

Test Item	Measurement			Spec.	Set	N	Data					Judge
							AVE.(X)	MAX.	MIN.	s	X±3s	
M Group Gas(SO ₂)	Contact Resistance (m Ω)	※T	Initial	60m Ω MAX.	5	165	23.770	29.84	19.02	3.579	34.507	○
			After Test	Δ R=40m Ω MAX.			0.535	4.48	-3.33	1.735	5.740	○
		※B	Initial	60m Ω MAX.	5	165	14.972	18.95	11.03	2.249	21.719	○
			After Test	Δ R=40m Ω MAX.			1.155	4.51	-1.61	1.380	5.295	○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○
N Group Salt Water Spray	Contact Resistance (m Ω)	※T	Initial	60m Ω MAX.	5	165	23.753	30.00	19.00	3.486	34.211	○
			After Test	Δ R=40m Ω MAX.			0.508	4.78	-3.40	1.797	5.899	○
		※B	Initial	60m Ω MAX.	5	165	14.965	18.99	11.03	2.149	21.412	○
			After Test	Δ R=40m Ω MAX.			1.278	4.71	-1.45	1.411	5.511	○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○
P Group Solderability	Zerox Time (sec.)	C/T	3sec. MAX	5	5	MAX. 0.1sec.					○	
		LOCK		5	5	MAX. 0.1sec.					○	
	Appearance	C/T	Wetness : 95% MIN.	5	5	95%MIN.was wet.					○	
		LOCK		5	5	95%MIN.was wet.					○	
Q Group Soldering Heat Resistance	Reflow twice			No Abnormality	5	5	No Abnormality					○
Soldering iron												
R Group Temp. rising	0.3A/Contact			Δ T=30K MAX.	5	5	No Problem. MAX.ΔT=10.6K					○

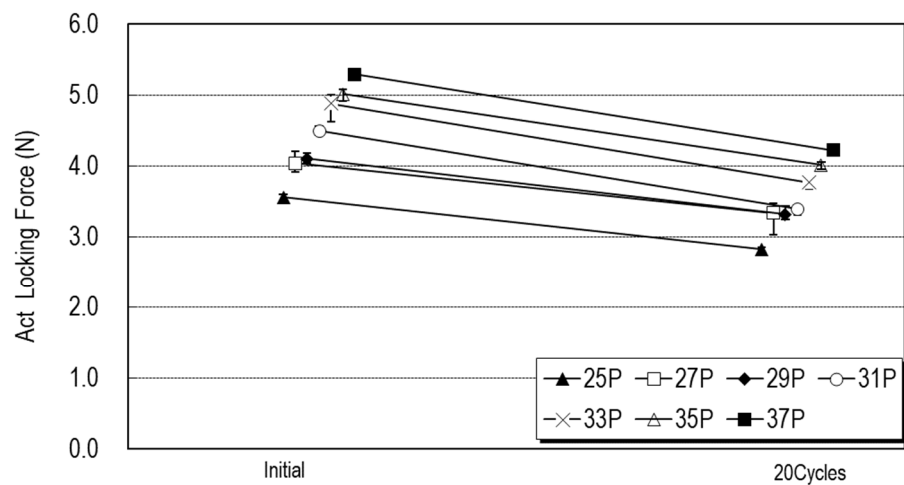
※T : Top Contact B : Bottom Contact



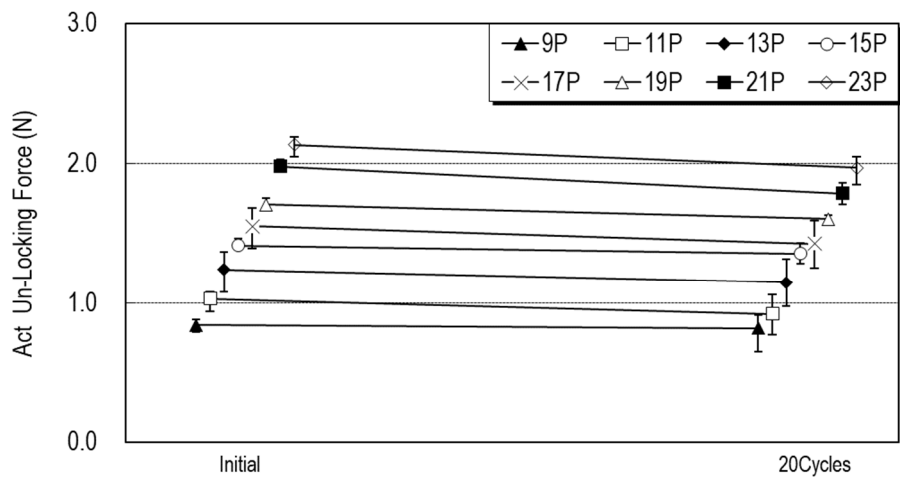
Graph.1 A change of contact resistance
A group : Fretting Corrosion



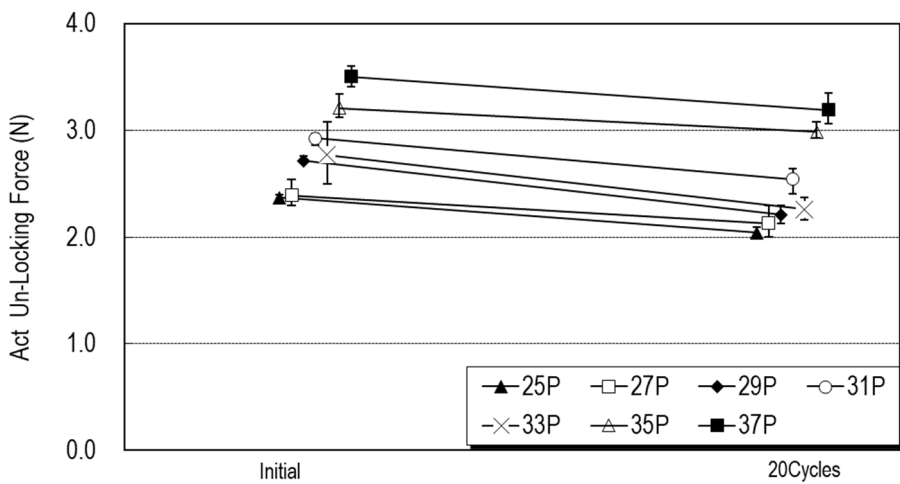
Graph.2 A change of Act Locking force
A group : Durability



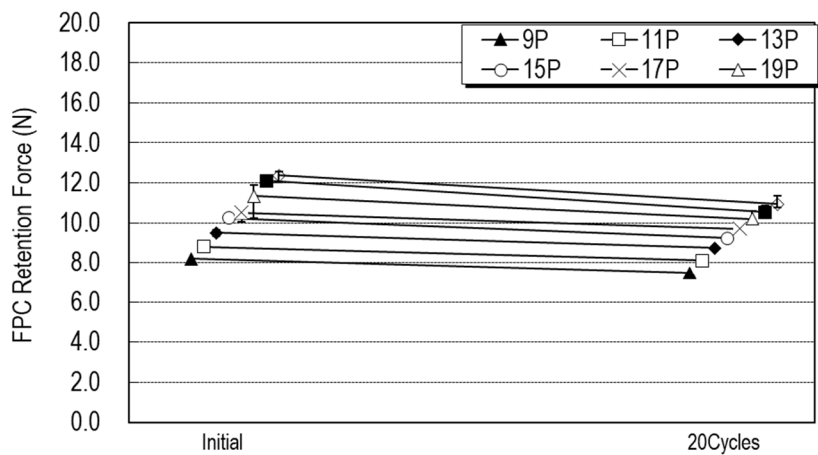
Graph.3 A change of Act Locking force
A group : Durability



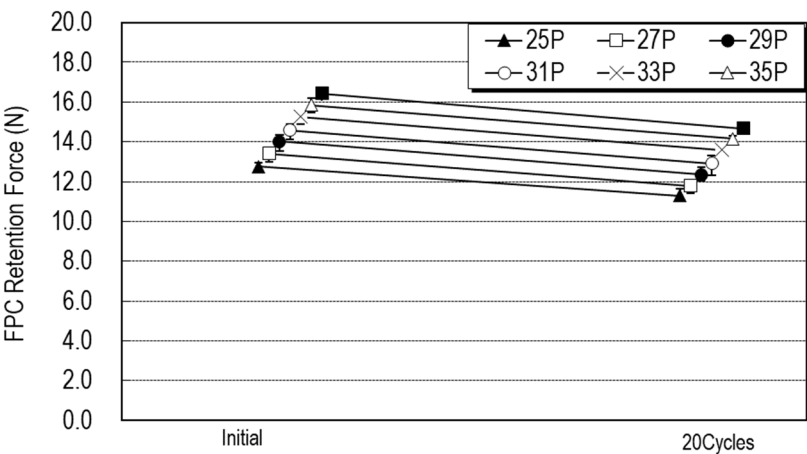
Graph.4 A change of Act Un-Locking force
A group : Durability



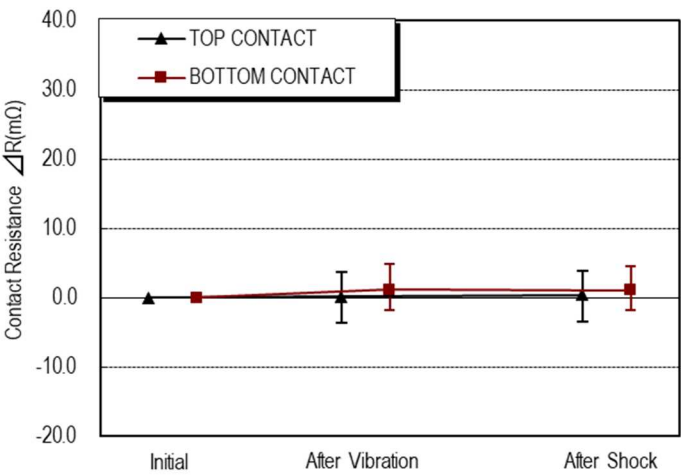
Graph.5 A change of Act Un-Locking force
A group : Durability



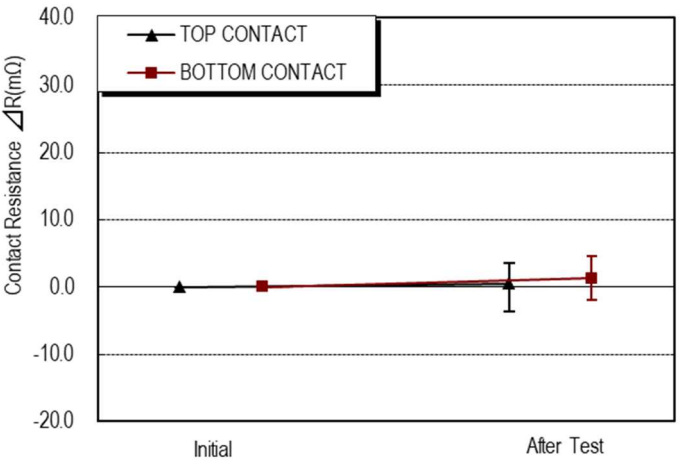
Graph.6 A change of FPC Retention Force
B group : FPC Retention Force



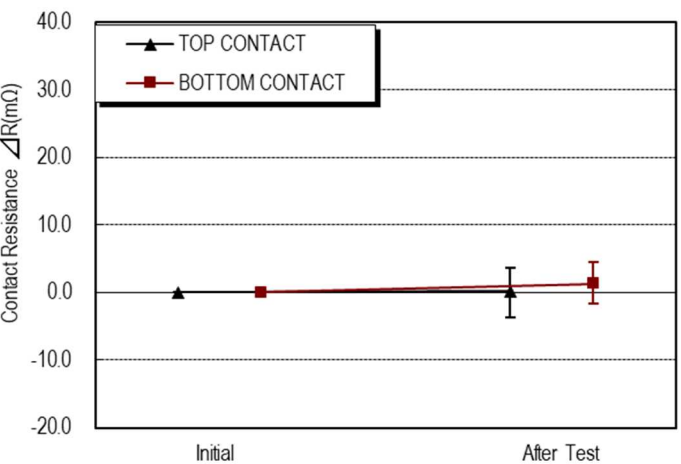
Graph.7 A change of FPC Retention Force
B group : FPC Retention Force



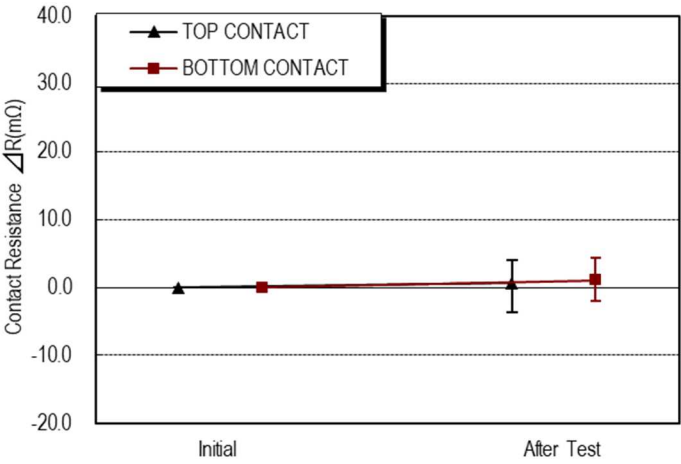
Graph.8 A change of contact resistance
D group : Vibration / Shock



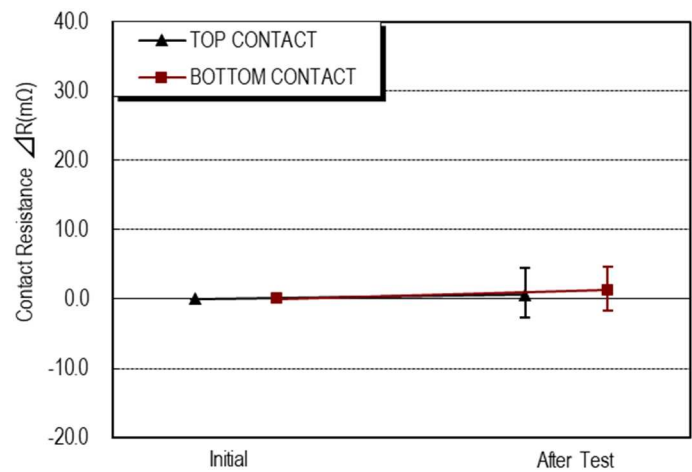
Graph.9 A change of contact resistance
E group : Fretting Corrosion



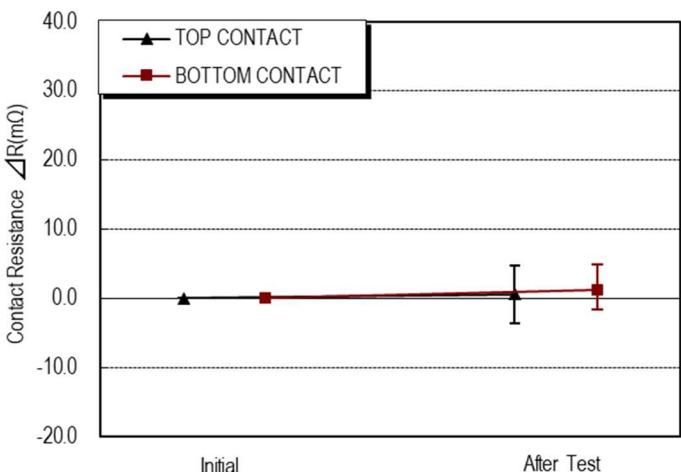
Graph.10 A change of contact resistance
F group : Thermal Shock



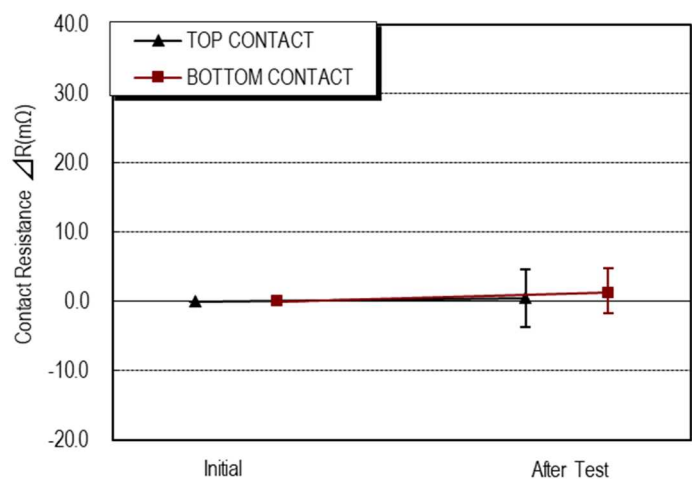
Graph.11 A change of contact resistance
G group : High Temp. Life



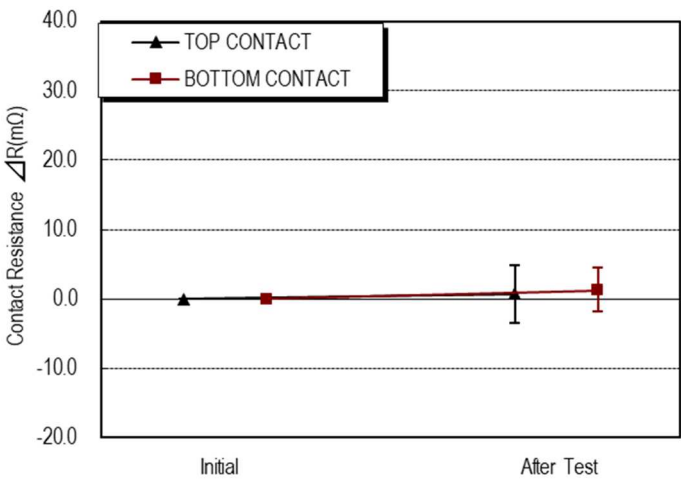
Graph.12 A change of contact resistance
H group : High Temp. & High Hum. energizing



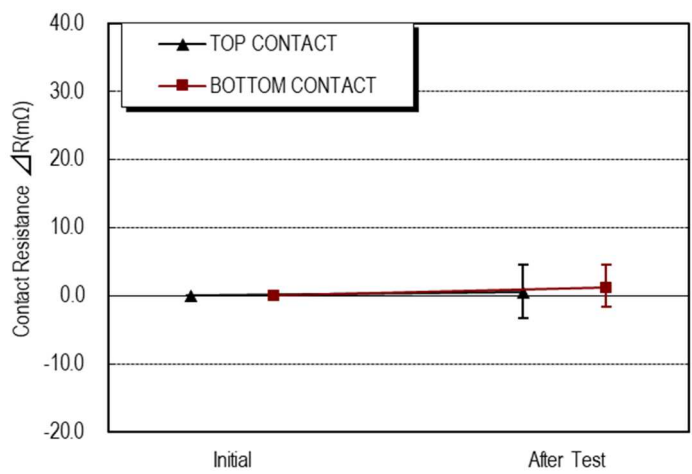
Graph.13 A change of contact resistance
J group : High Temp. & High Hum. Life



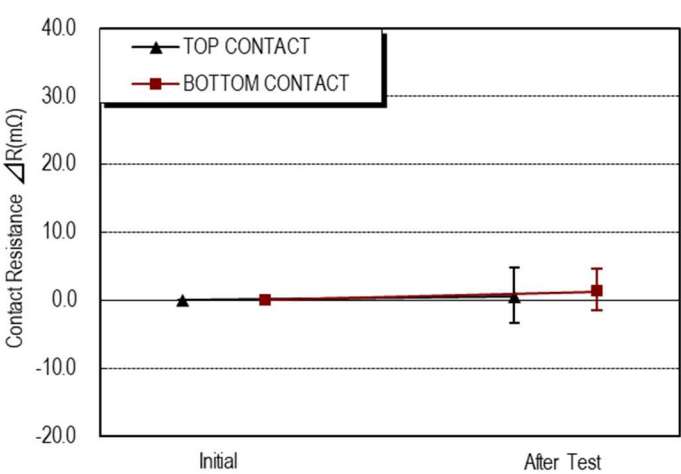
Graph.14 A change of contact resistance
K group : Cold Temp. Life



Graph.15 A change of contact resistance
L group : Gas(H₂S)



Graph.16 A change of contact resistance
M group : Gas(SO₂)



Graph.17 A change of contact resistance
N group : Salt Water Spray