



RenoNix Electrode Profile

2020.04.27



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- 2** **Business Area**
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1. Company Profile

Established 04th November 2010

Business

Semiconductor tools marketing, Refurbishment, Installation, Relocation, Conversion & Modification, Parts outsourcing, Technical Service, On call service & Technical Development & manufacturing

Capital 330K USD

Employee 16 Persons

Address 272, Naehyangan-gil, Jeongnam-myeon, Hwaseong-city, Gyeonggi-do, Korea (445-962)

Tel +82 31 354 9494

Fax +82 31 354 9323

E-Mail renonix@irenonix.com

Web Site www.irenonix.com

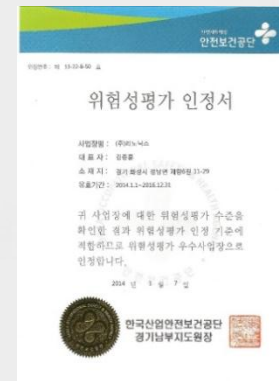
✓ISO9001
QAIC/KR/4291-B



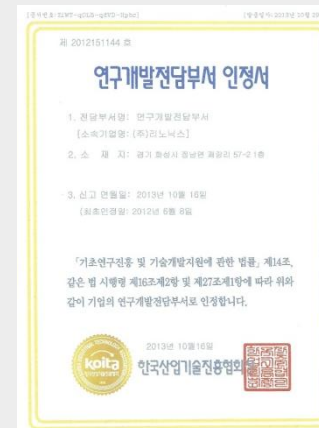
✓ISO14001
QAIC/KR/4292-B



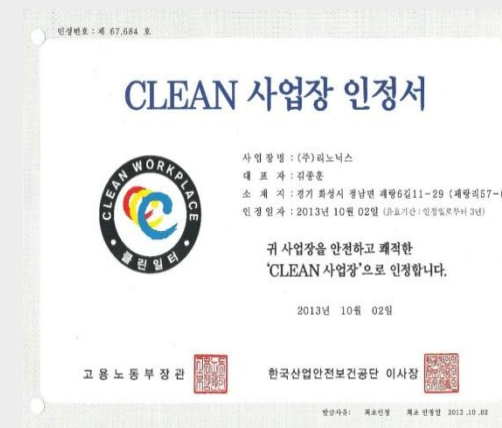
✓Enterprise Risk Management
13-22-B-50



✓Research Institute
2012151144

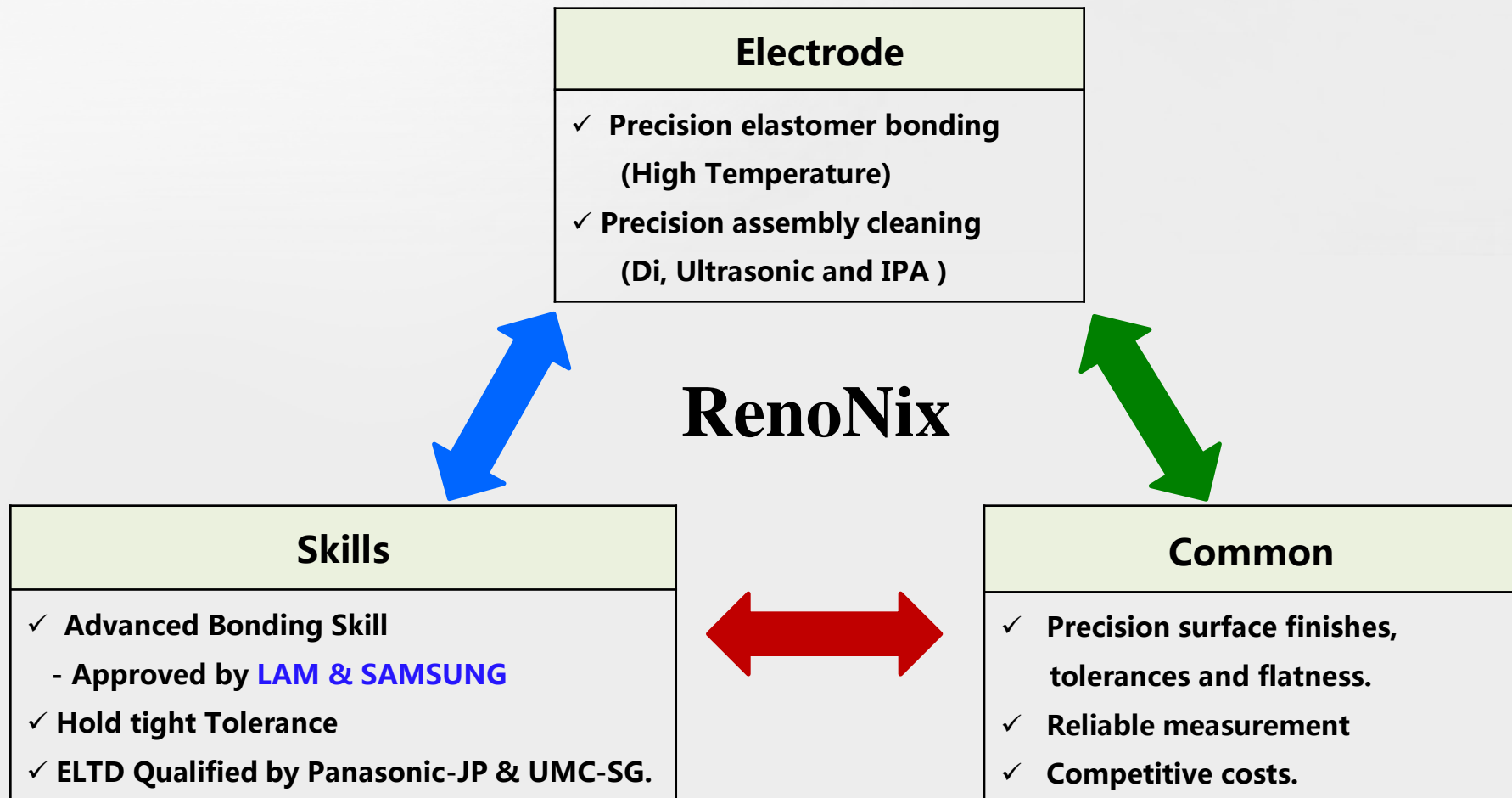


✓Clean Industry
67,684



1. Company Profile

➤ Strong Points



1. Company Profile

➤ Equipment : Main Facilities

NO.	Facilities	Q'ty	Process	Remarks
1	Cylinder Grinder	1ea	Out diameter	-
2	Ultrasonic M/C	Out-sourcing	Hole : 200mm electrode	Plan for introducing. 3 rd quarter on 2020
3	High-speed Hole MCT	1ea	Hole : 300mm electrode	Plan for expanding additional facilities on 2020
4	MCT	1ea	CNC : Shape	-
5	Horizontal Grinder	1ea	Surface	-
6	Chamfer M/C	1ea	Out-dia chamfer	-
7	Laser Marking M/C	1ea	Seral Number	
8	Etching Facilities	Out-sourcing	Removal of impurities	Plan for introducing. 3 rd quarter on 2020
9	Spinning M.C	1ea	Pocket mirror & Rapping	-
10	Polishing M/C	Out-sourcing	Mirror Polishing : < Ra 0.01	Plan for introducing. 3 rd quarter on 2020
11	Heater	2ea	Bonding : Elastomer	DUAL FAN TYPE
12	CMM (PRESIZE P760C)	1ea	2 ways : Non-contact & Contact	-

1. Company Profile

Customer Satisfaction

Equipment Refurbish

- ✓ AMAT PVD / CVD / ETCH, LAM / Novellus ETCH / CVD, PSK TERA / SUPRA, TEL ETCH / TRACK, DNS Scrubber, etc.
- System Refurbishment, Modification, Relocation, Upgrade & Conversion Start-up.

2nd / OPM NEW Overhaul Items

- ✓ Shower Head OPM NEW (200mm / 300mm)
- ✓ AMAT Magnet OPM NEW (200mm / 300mm)
- ✓ Roller Follower Mech 2nd NEW
- ✓ Novellus Heater Block 2nd New
- ✓ Load Port Overhaul (300mm)

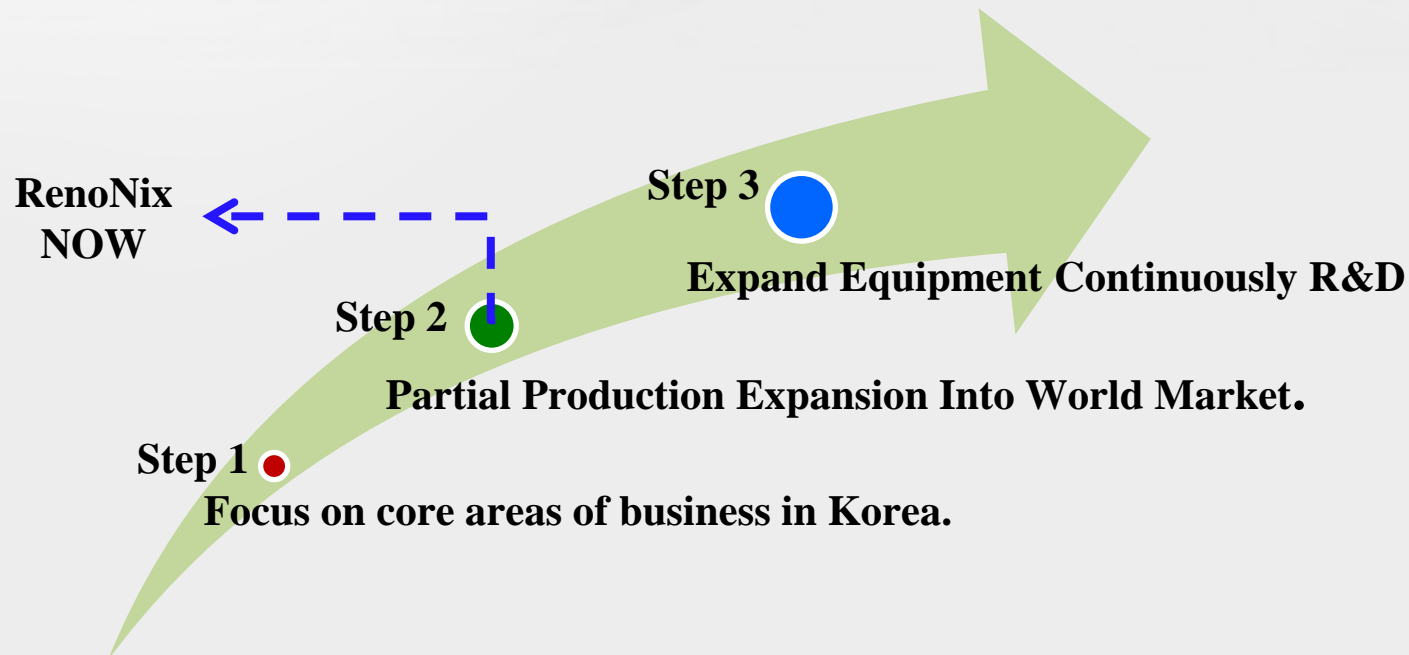
Spare Parts

- ✓ OEM / OPM / 2nd New Parts
- ✓ OPM : LAM Electrode / Stud Socket / ESC / ALN Heater / Gasket etc.
- ✓ 2nd New : Ceramic Pin.
- ✓ Provide process kits for PVD, CVD, ETCH process chamber.
- ✓ AMAT / LAM / NOVELLUS DNS / TEL etc. system part.

2. Business Area

➤ Major Area : Silicon Assemblies

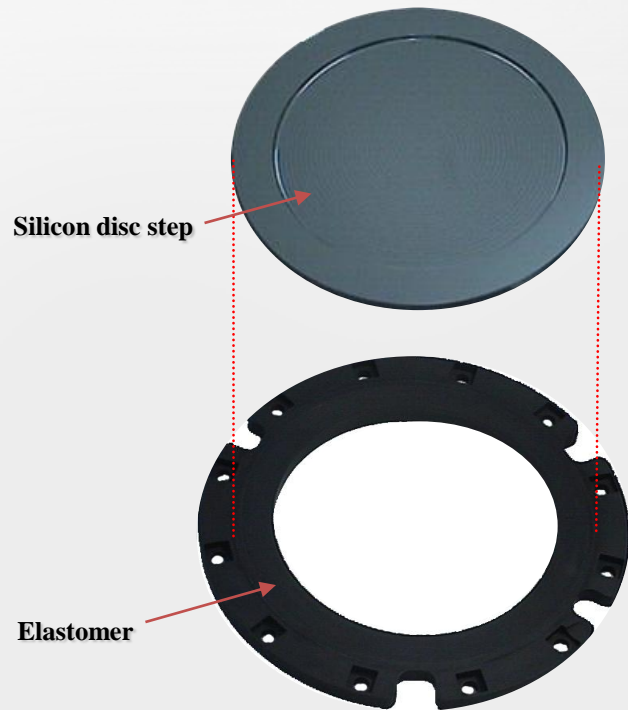
- ✓ Silicon is the unique and high-function materials which is used in the semiconductors area .
- ✓ RenoNix produces the state of the art technology silicon electrodes for the dry etching process .
- ✓ Strategy.



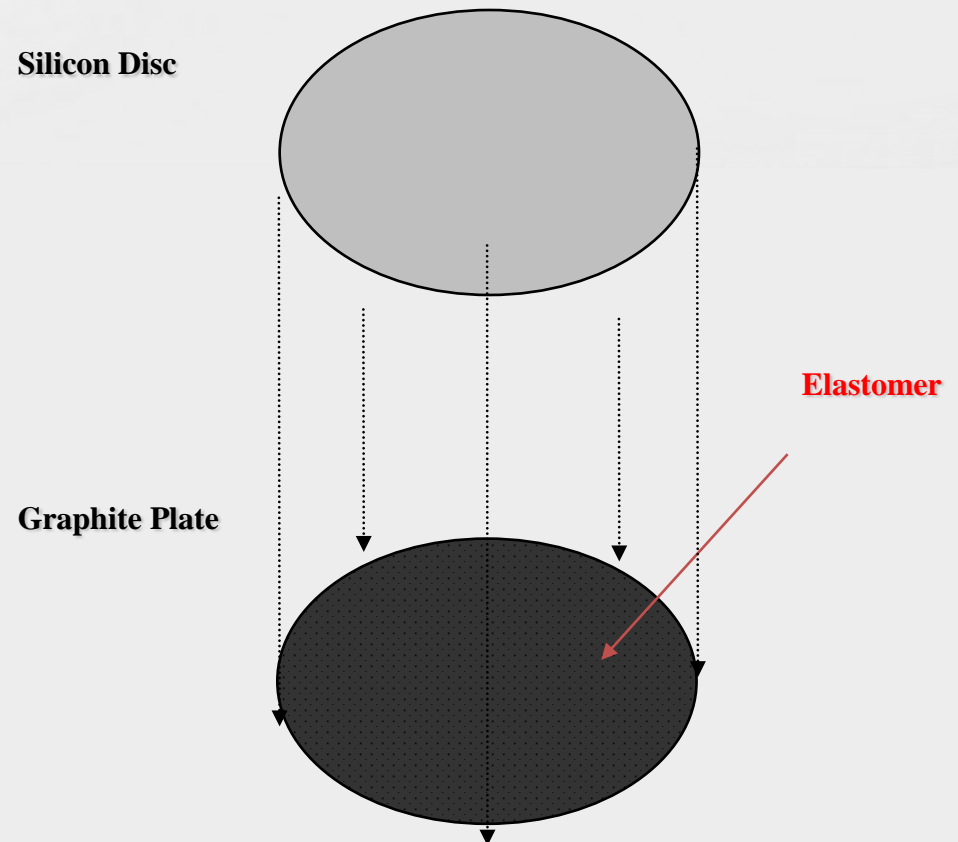
3. LAM Electrode OPM NEW

➤ LAM Silicon Upper Electrode

< 200mm HPT (839-443215-504) >



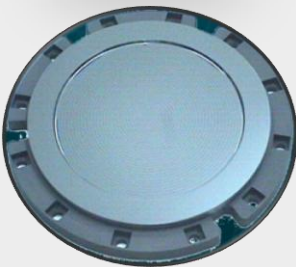
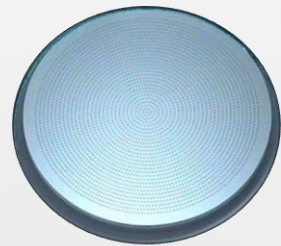
< 300mm Inner (839-021113-095) >



3. LAM Electrode OPM NEW

➤ LAM Silicon Upper Electrode

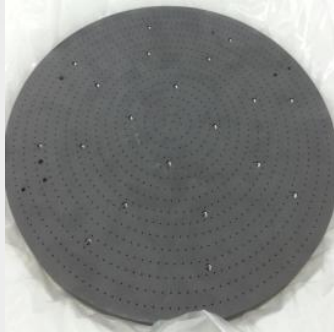


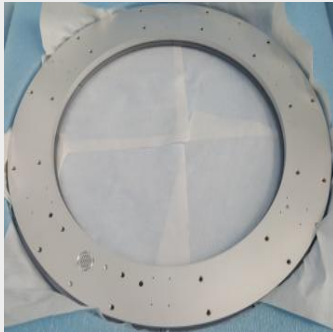
LAM 200mm Silicon Upper Electrode



Type	Part No.	Bond	H Q'TY	H Size	Res.
6" Normal	839 - 011906 - 10	Bonded	1849 1681	0.838	1 to 5
8" Standard	839 - 011907 - 100		3249	0.838	1 to 5
8" Exelan	839 - 011907 - 111		3249	0.635	0.005 to 0.02
8" Thicker	839 - 011907 - 222		2437	0.635	0.005 to 0.02
8" HP	839 - 443215 - 101	Bonded	3249	0.635	0.005 to 0.02
8" HPT	839 - 443215 - 502(504)		3249	0.635	0.005 to 0.02

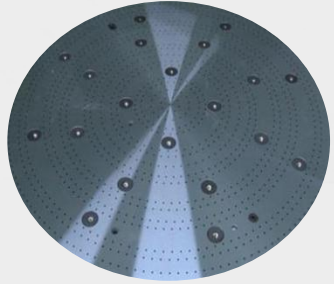
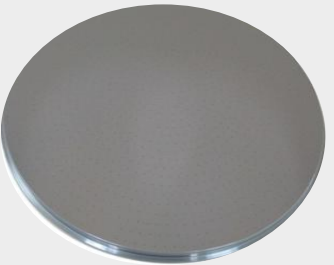

3. LAM Electrode OPM NEW

➤ **LAM 300mm Silicon Upper Electrode (GBE & ABE Type Qualified by UMC-SG)**

Type	Part No.	Bond	INNER	OUTER
12" Inner GBE Type	839 - 021113 - 002/095	Silicon + Graphite Bonding Type		
12" Outer GBE Type	839 - 020965 - 005/020/095			
12" Inner ABE Type	839 - 052157 - 010	Silicon + Aluminium Bonding Type		
12" Outer ABE Type	839 - 052158 - 020			

3. LAM Electrode OPM NEW

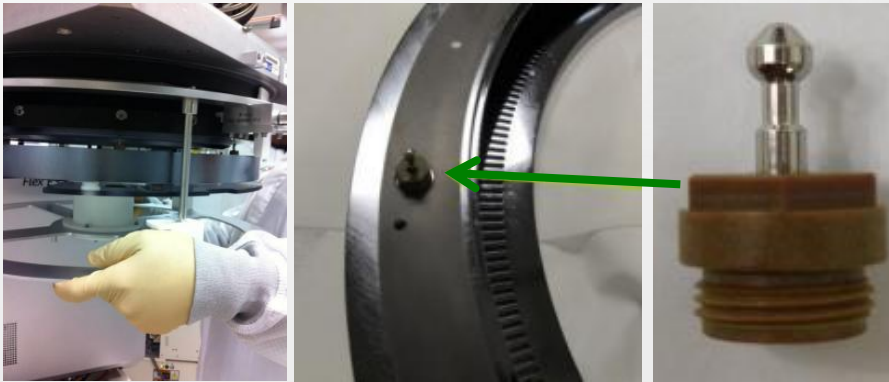
➤ LAM 300mm Silicon Upper Electrode

Type	Part No.	Bond	H size	Res.	INNER/OUTER
12" Inner MONO	839 - 044157 - 431	Silicon Bonding Type	0.635	0.005 To 0.02	
12" Inner TALON	716 - 069688 – 005 / 022	Non	0.45	0.005 To 0.02	
12" Outer TALON	716 - 082039 – 001 / 002	Non	-	0.005 To 0.02	

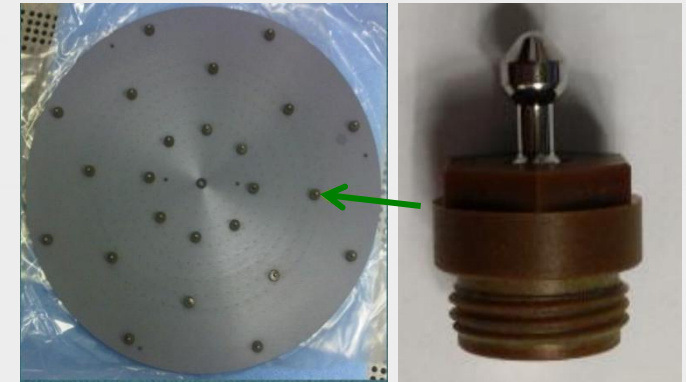
3. LAM STUD Socket OPM NEW

➤ LAM 300mm FLEX 45/DX/EX STUD Socket

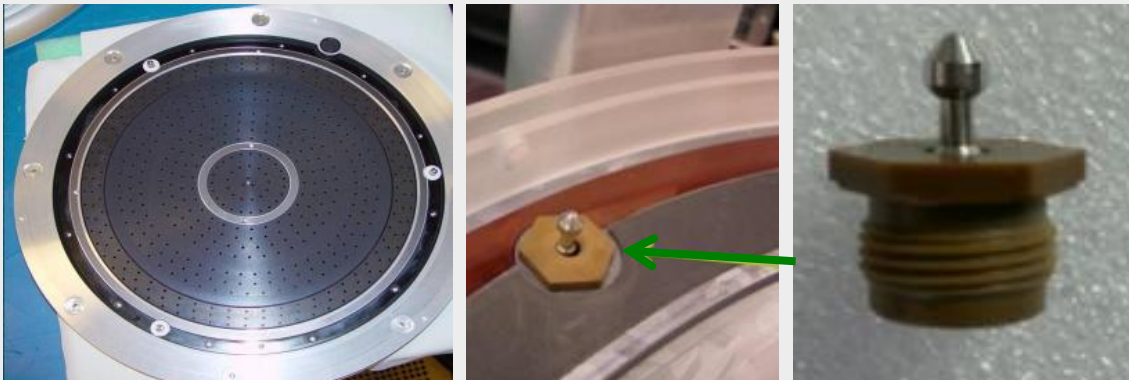
LAM FLEX – 45 Stud Socket (C-Shroud Ring)
839 – 086924 - 021



LAM FLEX – DX Stud Socket
839 - 086924 - 025

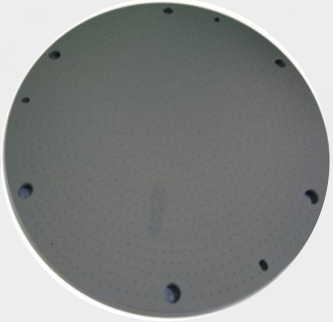



LAM Flex – EX Stud Socket
839 – 070842 - 004



3. TEL Electrode 2nd NEW

➤ TEL 300mm Silicon Upper Electrode

Type	Part No.	Bond	H size	Res.	INNER
12" LD Type	3D10 - 250316 - 11(SE)	Non	0.5	60 To 95	
12" VIGUS	3D10 - 302020 - 11	Non	0.5	65 To 90	
12" VIGUS	ES1810 - 224789 - 11	Non	0.5	1 To 5	

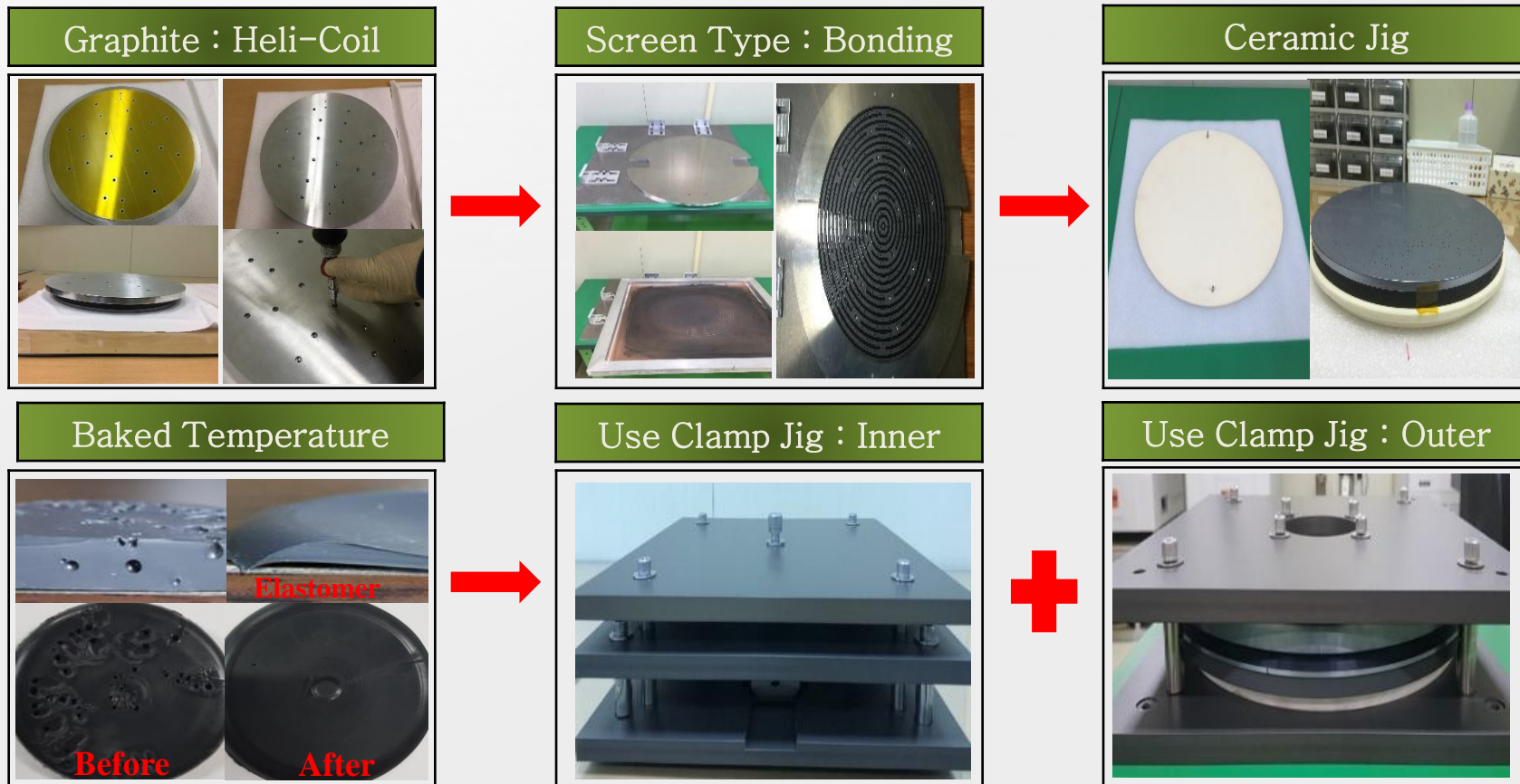
4. Electrode Manufacturing Process

➤ Production Phase



4. Electrode Manufacturing Process

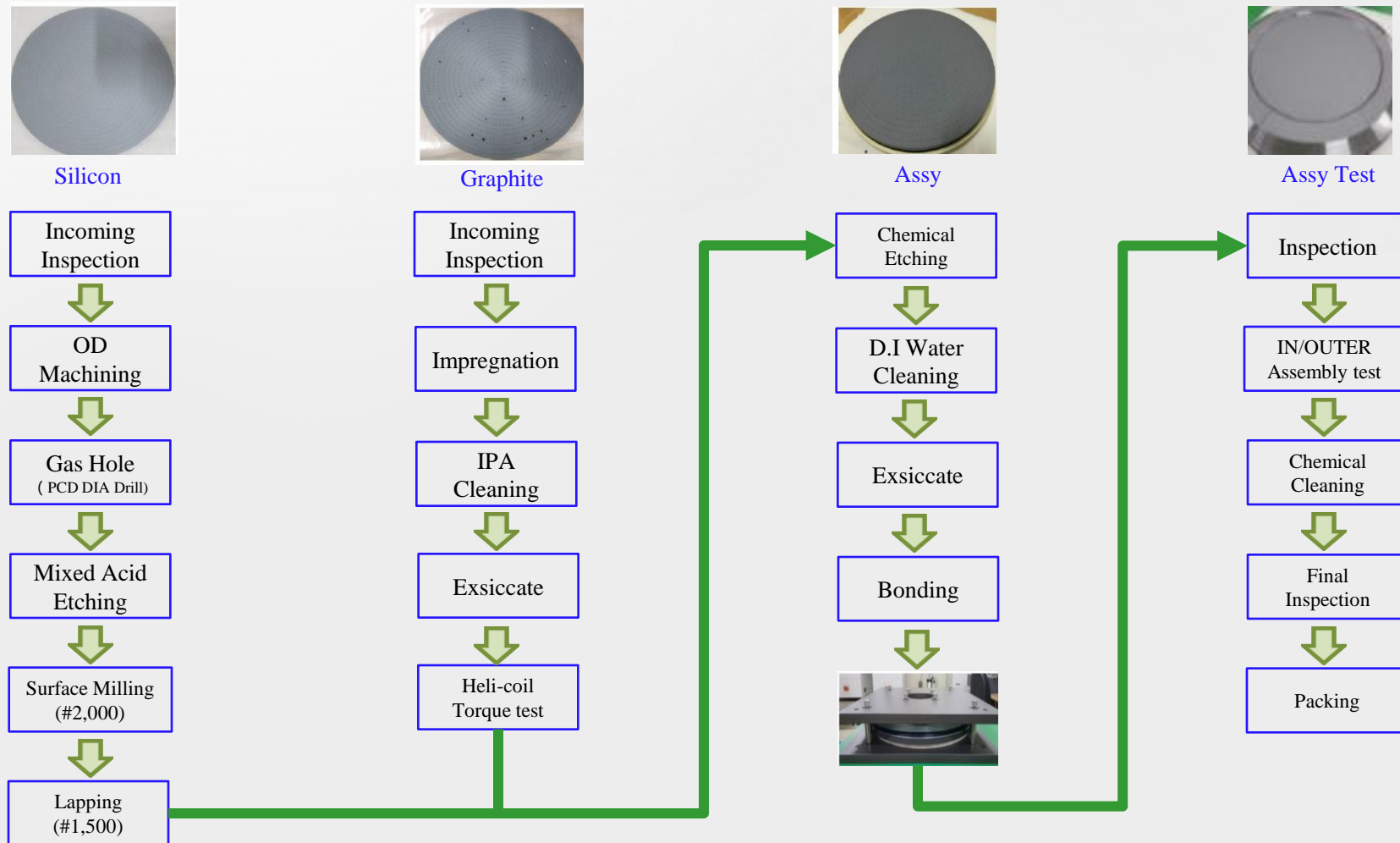
➤ Production Phase



- | | |
|--------------------------|---|
| <p>Key Points</p> | <ul style="list-style-type: none"> Ⓐ. Strongest advantage: Use stable & approved technique by experienced worker. Ⓑ. Inspect every step of procedure by trained supervisor. |
|--------------------------|---|

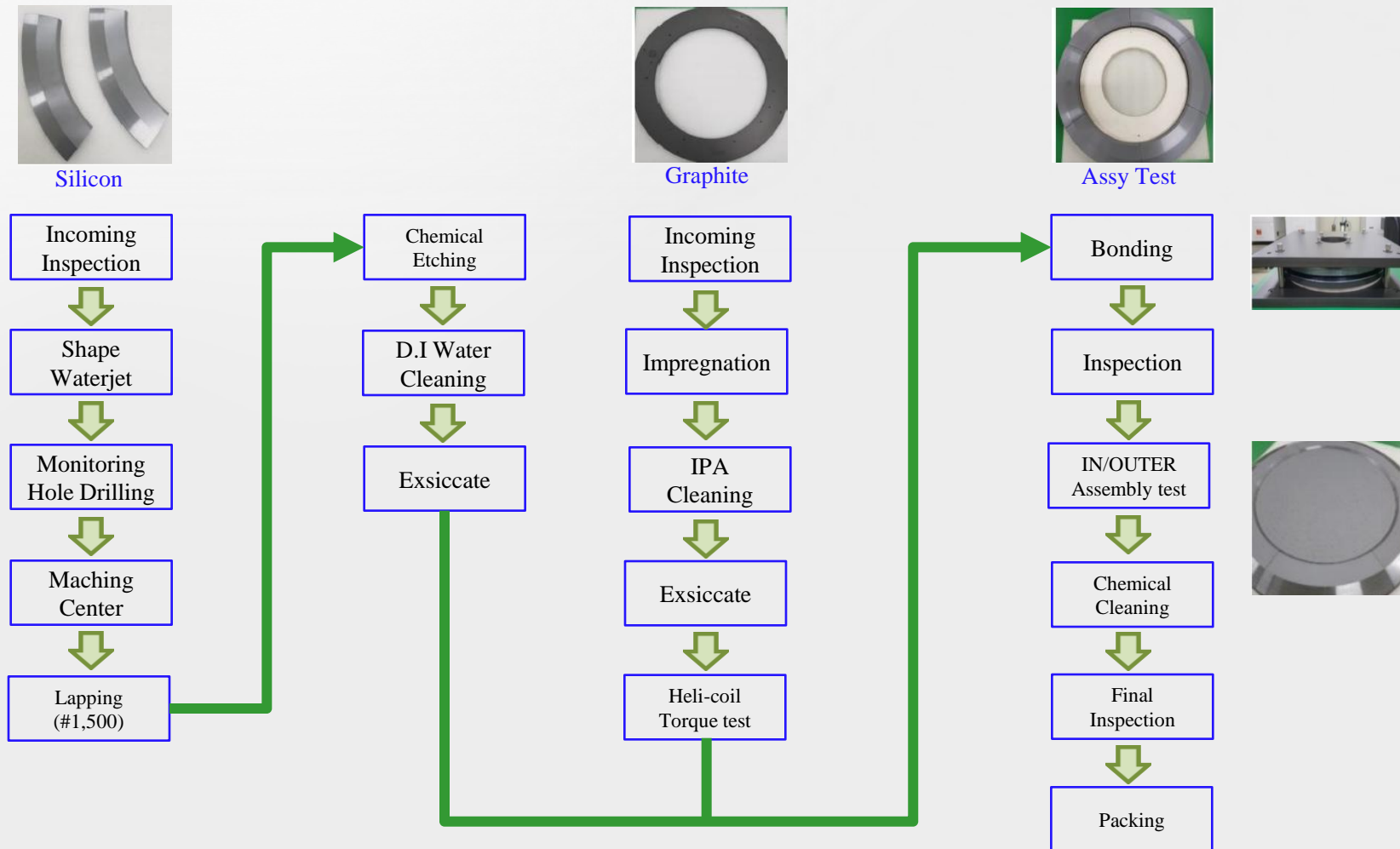
4. Electrode Manufacturing Process

➤ SI Electrode Manufacture Flow Chart (ASSY, ELCTD, INNER 839-021113-095)



4. Electrode Manufacturing Process

➤ SI Electrode Manufacture Flow Chart (ASSY, ELCTD, OUTER 839-020965-095)



4. Electrode Manufacturing Process

➤ SI Electrode QC Process Check List (GBE Type)

300MM ELCTD QC Process											
Preparatory Stage		Bonding Stage	Inspection Stage								
<table border="1"> <tr><th colspan="2">Silicon</th></tr> <tr><td>Item</td><td>Manufacturing</td></tr> <tr><td>DOC.</td><td>RUN SHEET</td></tr> <tr><td>Records</td><td>SPEC</td></tr> </table>		Silicon		Item	Manufacturing	DOC.	RUN SHEET	Records	SPEC		
Silicon											
Item	Manufacturing										
DOC.	RUN SHEET										
Records	SPEC										
<table border="1"> <tr><th colspan="2">Graphite</th></tr> <tr><td>Item</td><td>Outside Cleaning</td></tr> <tr><td>DOC.</td><td>Cleaning INS. Bonding Management Register#1-1</td></tr> <tr><td>Records</td><td>Approval</td></tr> </table>		Graphite		Item	Outside Cleaning	DOC.	Cleaning INS. Bonding Management Register#1-1	Records	Approval		
Graphite											
Item	Outside Cleaning										
DOC.	Cleaning INS. Bonding Management Register#1-1										
Records	Approval										
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DOC.	Bonding Management Register#1										
Records	SPEC/Picture										
↓											
<table border="1"> <tr><td>Item</td><td>Inside Cleaning (Ultrasonic/IPA)</td></tr> <tr><td>DOC.</td><td>Bonding Management Register#1</td></tr> <tr><td>Records</td><td>Approval</td></tr> </table>		Item	Inside Cleaning (Ultrasonic/IPA)	DOC.	Bonding Management Register#1	Records	Approval				
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Item	Outside Cleaning										
DOC.	Cleaning INS. Bonding Management Register#1-1										
Records	Approval										
↓											
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Item	Dimension INS. Visual INS.										
DOC.	Process INS. Bonding Management Register#1-1										
Records	Approval										
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Item	Heli-Coil Test										
DOC.	Bonding Management Register#1-1										
Records	Picture										
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DOC.	Bonding Management Register#1-1										
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Item	Spreading Test										
DOC.	Bonding Management Register#2										
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DOC.	Bonding Management Register#2										
Records	Conditions										
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Item	Dimension INS. Visual INS.										
DOC.	Bonding Management Register#3										
Records	Dimension/Approval										
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Item	Assembly Test										
DOC.	Bonding Management Register#3										
Records	Approval/Picture										
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Item	Tensile Strength Test										
DOC.	Bonding Management Register#3										
Records	Results										
↓											
<table border="1"> <tr><td>Item</td><td>Gap Test (Between SI & Gr)</td></tr> <tr><td>DOC.</td><td>Bonding Management Register#3</td></tr> <tr><td>Records</td><td>Results</td></tr> </table>		Item	Gap Test (Between SI & Gr)	DOC.	Bonding Management Register#3	Records	Results				
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DOC.	Bonding Management Register#3										
Records	Results										
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↓											
<table border="1"> <tr><td>REMARKS</td><td colspan="2"> + Every Parts have six sheets for inspections and process. + Each steps will be inspected 100% by supervisor's approval. </td></tr> </table>		REMARKS	+ Every Parts have six sheets for inspections and process. + Each steps will be inspected 100% by supervisor's approval.								
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Strengthen Bonding QC

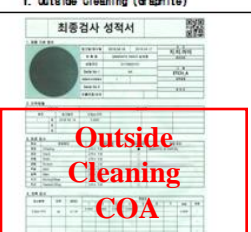


Strengthen Assembly QC

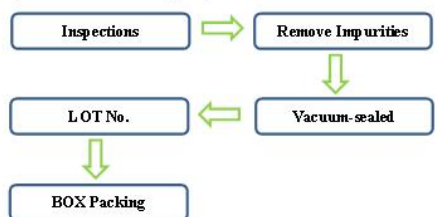
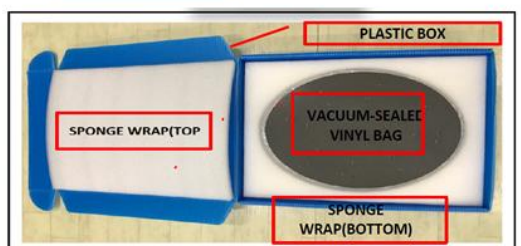
Strengthen Heli-Coil QC

4. Electrode Manufacturing Process

➤ LAM 300mm Silicon Upper Electrode Inspection & Package Drawing

CERTIFICATE OF COMPLIANCE AND INSPECTION					
1. Customer :		Inspection Date : 01/21/2019			
2. Part Name : 12L D/E EXELAN		Inspected By : SY.PARK			
3. Part Number : 889-021118-096		Order No :			
		Drawing No :			
		Quantity : 1 EA			
Dimensions					Unit : mm
No	Item	Spec	Tolerance	Result	Remarks
A	Hole Diameter(disc)	0.655	±0.1	0.65	OK
B	Thickness(disc)	6.55	±0.1	6.59	OK
C	Hole Diameter(graphite)	1.00	±0.1	1.02	OK
D	Thickness(graphite)	10.25	±0.1	10.29	OK
E	Out diameter(disc)	809.15	-0.05	809.16	OK
F	Out diameter(graphite)	809.10	-0.05	809.10	OK
G	Thickness(cathode)	16.60	±0.1	16.66	OK
H	Set hole Diameter	6.18	±0.05	6.19	OK
I	Ellipse X	6.25	±0.1	6.25	OK
	Ellipse Y	6.96	±0.1	6.97	OK
	Ellipse DP	6.50	±0.1	6.56	OK
J	Hole 1	6.25	+0.05	6.26	OK
	DP	6.50	±0.1	6.52	OK
K	Hole 2	6.96	±0.1	6.97	OK
	DP	6.50	±0.1	6.54	OK
L	8X 8/62 UNCF.C.D	246.35	±0.1	246.85	OK
M	4X 8/62 UNCF.C.D	80.80	±0.1	80.84	OK
N	8X 8/62 UNCF.C.D	172.20	±0.1	172.19	OK
O	Lepping Process	≠ 20th		2	OK
P	Alkali Etching Process	≠ 20th		2	OK
Q	Flatness	<10um		5	OK
R	flaws, nicks, sports,etc.	non		N/A	OK
MATERIALS INFORMATION					
Grade : Single Crystal		Purity : 6N over			
Type : P-TYPE		Orientation : 1-0-0			
Dopant : boron		Resistivity : 0.01 ohm-cm			
Other :					
Remarks : 889-021118-096/L16096A-01					

CERTIFICATE OF COMPLIANCE AND INSPECTION								
Part Number : 889-021118-096		Inspection Date : 01/10/2018						
Part Name : 12L D/E EXELAN		Inspected By : JW.LEE						
Serial Number : L16096A-04								
1. Outside Cleaning (Graphite)			2. Assembly Test					
								
Result : OK			Result : PASS					
5. Heli-Coil Test								
		1	2	3	4	5	6	7
		8	9	10	11	12	13	14
		15	16	17	18	19	20	
NO	ITEMS	STANDARDS	DATE	SIGN	RESULT		REMARK	
1	Stable Heli-Coil	VISUAL - SHAPE	1/9	KW.LEE	v			
2	Exclusive Installation Jig	Visual - Ins.	1/9	KW.LEE	v			
3	GO & NO GAGE TEST	ONLY GO	1/9	KW.LEE	v			
4	SEM BOLT Through Into.	SOFT INSERTION	1/9	KW.LEE	v			
5	HELI COIL Regular position	VISUAL - Conditions	1/10	JW.LEE	v			
6	TORQUE TEST	15 N.cm	1/10	JW.LEE	v			
7	SEM BOLT INSTALLATION	10MM SOFT INSERTION	1/10	JW.LEE	v			
Approval					Confirmed by Supervisor			

PACKAGE DRAWING	Management No.	SD-C1-03
	Registered Date.	
	Revised Date	
	PAGE	
1. Packing		
A. Check a necessary materials and tools		
1). Put from DRY OVEN.		
2). IPA Cleaning. (Plastic Box)		
3). Dry & Air Cleaning. (Vinyl bag)		
B. Vacuum Packing		
1). Check the surface condition.		
2). Record "LOT-No." on the box		
3). Product is placed inside a cleaning vinyl bag and Vacuum-sealed.		
4). Bagged part is wrapped with bubble wrap. (Product is double-wrapped)		
		
		

RenoNix Major Customer



UMC-SG

Panasonic



SILTERRA



OMRON Japan



SSMC

Contact Point

**We're Capable of Most of service for PVD,CVD, ETCH areas.
If you have any inquiry or interest , please feel free to contact us.**



RenoNix Co., Ltd

**272, Naehyangan-gil, Jeongnam-myeon,
Hwaseong-city, Gyeonggi-do, Korea (445-962)**

Tel : +82 31 354 9494

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