



# SemiSyn

SemiconSynapsis

## CARBON FIBER END EFFECTORS FOR WAFER HANDLING



### Features and list of available models January 2016



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# CARBON FIBER END EFFECTORS

The use of carbon fiber in wafer handling end effectors construction gives many advantages, such as longer duration, light weight, good resistance to chemicals and shock resistance.

All those features will result into a much higher MTBF of the part, which will give a definitely lower cost of ownership.

Carbon is stiff and flexible, and can't be permanently deformed. It is also conductive, and then will not give ESD charges generation, and can be processed in a fast and accurate way to prepare parts even in small series.

## General Specifications

**Type of carbon used :** Bidirectional or unidirectional carbon fiber, from 90 to 220 gr/m<sup>2</sup>

**Matrix material:** Epoxy or phenolic resin

**Specific weight:** 1.5 (carbon)

**Elastic Modulus:** 28,000 Kg/mm<sup>2</sup> - carbon only - 15,000 Kg/mm<sup>2</sup> with matrix (AI=10000)

**Resistivity (Typical):** 10  $\mu$ Ohm (carbon without matrix)

**Temperature of use:** Environment 80°C; wafer (average handling time exposure) 300°C (kapton pads)

**Resistance to chemicals:** Good for all CMP chemicals; not suitable for strong organic solvents

**Vacuum pads:** PTFE, PTFE/Ceramic, Polyimide (Kapton) or UHMW depending on application

**Tooling tolerances:** +-0.2 mm max on external shapes - 0.3 mm max. on planarity test

**Contamination features:** Outgassing test for amines: at room temperature no changes; at 110°C + 18 ppB, decreasing to +0 after 3 minutes

**Particles:** maximum total of 50 particles.cm<sup>2</sup> (KLA surfscan 6200, class1 clean room, teflon pads) Particle count 0.16-0.2 $\mu$ : 21, 0.2-0.3 $\mu$ :15, 0.3-1 $\mu$ :11, >1 $\mu$ : 3

**Metal contamination (better than):** <2E 10 atoms/cm<sup>2</sup> added. Elements Cu, Fe, Na, Al,CA,Cr,K,Mg,Mn,Ni,Zn,Co - Measurement technique : Surface (VPD) I.C.P.M.S.

**Quality control:** 100% sampling on surface finish, dimensions, planarity, final assembly, functional vacuum test

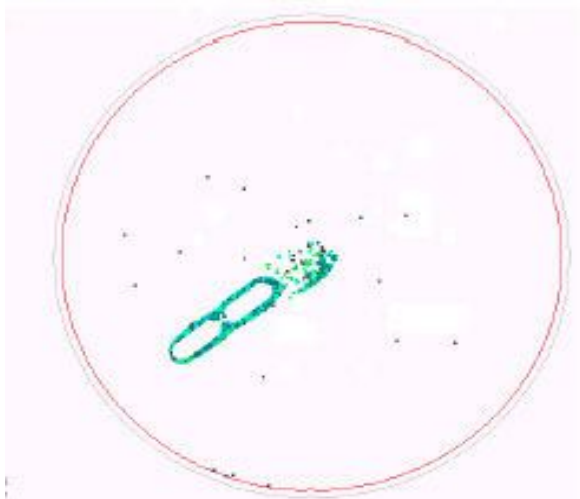


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## COMPARATIVE TESTS AND LONG TERM TESTS

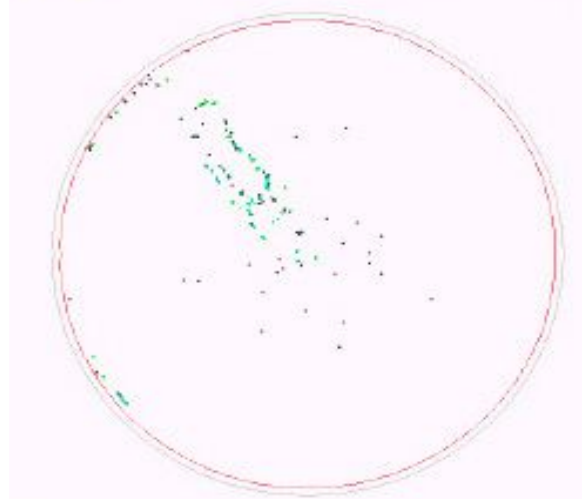
**Particle contamination** comparative test after 1000 cycles of use. Test type KLA surfscan 6200, class1 clean room, teflon pads

SIZE	0.16 - 0.2	0.2 - 0.3	0.3 - 1.0	>1.0	TOTAL
Q.TY	109	264	666	525	1564



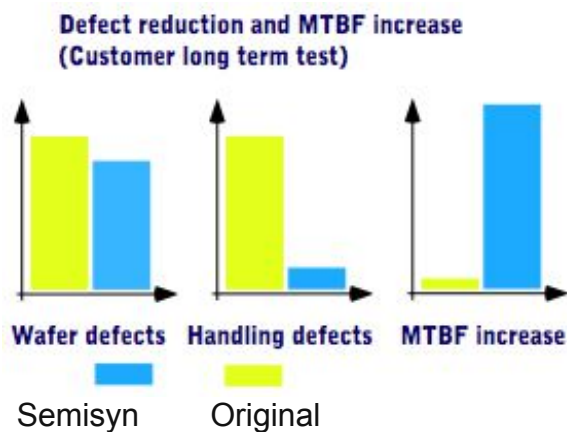
ORIGINAL PART

SIZE	0.16 - 0.2	0.2 - 0.3	0.3 - 1.0	>1.0	TOTAL
Q.TY	109	84	58	18	269



SEMISYN PART

**Comparative long term test** for handling defects (customer data)



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# RAPID PROTOTYPING SERVICE

In case of OEM parts or parts not included into the list given in the following, we have a rapid prototyping service to supply test parts to our customers.

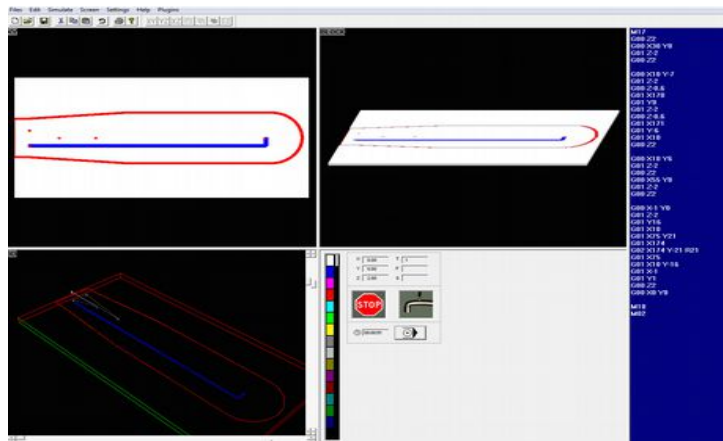
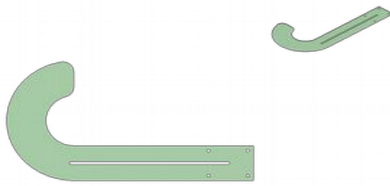
We need to have a drawing or a sample of the original part (in this case a damaged or broken part is enough, but needs to be complete) and we can supply a prototype for testing in a very short time.

After an evaluation of the request we can propose to the customer some design modifications to better fit the carbon fiber technology.

We can also design custom parts for special applications or OEM parts.

All the prototypes are CAD designed and CNC manufactured to assure the precise replication of the final products.

The choice of carbon fiber type is done according to the functional requirements.



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## LIST OF AVAILABLE MODELS

In the following pages is given a list of available models with pictures and all the available information about the original parts.

The list includes only parts installed and tested at customer site.

Parts are grouped for equipment brand in alphabetical order. Where available is given also the type of the equipment and/or the original part number.

Given the large number of parts done, only a selection of available models is given.

When asking for a part it is needed to supply some information such as overall dimensions and other process parameters to verify that the needed model is exactly matching with our part number.

A request form is available for download for both new parts or already listed parts.



Brand	Description	Our code
<b>APPLIED MATERIALS</b>		
	AMAT MIRRA (Short model)	C15-AMTM1-1V
	AMAT MIRRA MESA (Long)	C15-AMTM2-1V
	AMAT MIRRA Modified	C15-AMTM3-1V
	AMAT CVD DXZ	C15-AMTDXZ1-1V
	AMAT MIRRA TRACK	C15-AMTMT-1V
	AMAT	C15-AMT6-1V
<b>AXCELIS</b>		
	AXCELIS GSD 200	C15-AXCG1S-1V
	AXCELIS GSD ULTRA	C15-AXCG1L-1

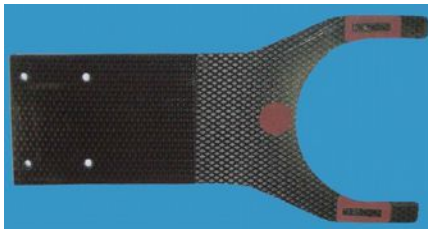


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**Brand**  
**CANON**

**Description**

**Our code**



CANON I5

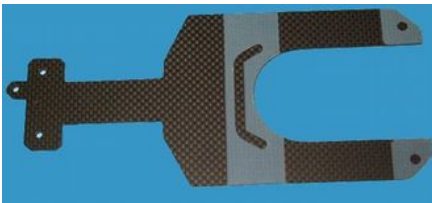
C15-CNI5-1V



CANON EF 2+

C15-CNEF2-1V

**CYBERNETICS**



CYBERNETICS PACKAGER  
(different versions available  
ask for details)

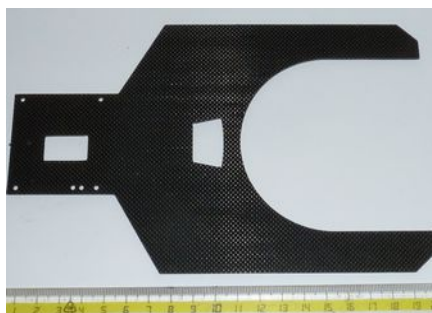
C15-CYB01-1V

**DISCO**



Disco Grinder 6"

C15-DSC01-1V











Disco Grinder 8"

C15-DSC02-1V



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Brand	Description	Our code
	DNS AS2000 scrubber	C15-DNAS2K1-1V
	DNS60	C15-DN60A1-1V
	DNS 60 (original P/N 2-F3-38335)	C15-DN62-1V
	DNS 80 A (original P/N 2-F3-38538)	C15-DN80A-1V
	DN SSK 200 (200 mm)	C15-DNSK228-0M
	DNS SK2000	C15-DNSK238-0M
	DNS RF3	C15-DNSRF3-0M
<b>EBARA</b>		
	EBARA P/N 2003NN000249-101	C25-EB01-1V



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Brand	Description	Our code
<b>EVG</b>		
	EVG wafer tester P/N 970-288-2746	C13-EV001F-1V
	EVG 150 Track	C15-EV150-1V
	EVG EE robot (also IVS System)	C25-EV03-1V
<b>FALCON</b>		
	FALCON metrology tool	C15-FLC01-1V
<b>FSI</b>		
	FSI Polaris (arm) P/N 420210-001 Rev.B Aluminum holder	C15-FSP01-1V AL-PL2-H1
<b>GSI LUMONICS</b>		
	GSI LUMONICS laser end effector	C15-GSLSR1-1V



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Brand	Description	Our code
<b>HITACHI</b>		
	HITACHI CD SEM	C15HT01-1V
	HITACHI CD SEM	C15HT02-1V
<b>KARL SUSS</b>		
	SUSS GAMMA 6"	C15-KSG61-1V
	SUSS GAMMA 8"	C15-KSG81-1V
<b>KLA TENCOR</b>		
	KLA P/N 52-0375	C15-KLT3-2V
	KLA 8100	C15-KL8100-1V
	KLA 2103	C15-KL2103-1V



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**Brand****Description****Our code**

KLA SP1 P/N 0068627-000  
P/N 366889

C15-KLSP1-1V

**LEICA**

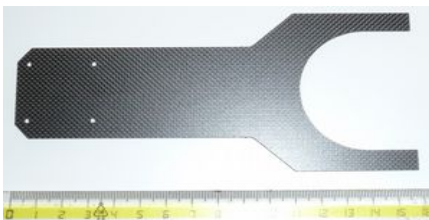
LEICA INS 300 exchange arm  
P/N 020-611.017-004

C30-LKL8-2V

**LEICA VISTEC**

LEICA VISTEC  
INS 3300 loading arm

C30-LKV33-1V

**LINTEC**

LINTEC tape remover end effector  
μ-holes version

C15-LNTR01-1V

**MACTRONIX**

MACTRONIX EXCHANGE ARM

C60-MCXE01-2V



MACTRONIX LOADING ARM

C15-MCXL01-1V

**NIKON**

NIKON NWL6400 loading arm

C13-NKLF1-1V



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Brand	Description	Our code
	NIKON loading arm P/N 4B019-048-AN code is the right arm one the couple is delivered	C15-NKLMF1-1V
	NIKON loading arm P/N 4B006-106-AN	C30-NKLQA1-1V
	NIKON Stepper arm 6-8" P/N 4B001-383-A	C15-NKS1L-1V
	NIKON vacuum chuck depo P/N 22-CTC 0050	C15-NKS2-1V
	NIKON NWL 860 exchange arm	C45-NKL03-1V
	NIKON NWL 860 loading arm	C15-NLKL86-1V
	NIKON NWL200 loading arm $\mu$ -holes and teflon pad versions available	C15-NKL200L-1V



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**Brand**  
**NITTO**

**Description**

**Our code**



NITTO 8" detaper loading arm

C15-NTD01-1V



NITTO 6" detaper loading arm

C13-NTD02-1V

**NOVELLUS**



NOVELLUS 04WP3M end effector

C15-NOV01-1V

**NYDEQ**



NYDEQ old Leica or Zeiss  
microscope loader

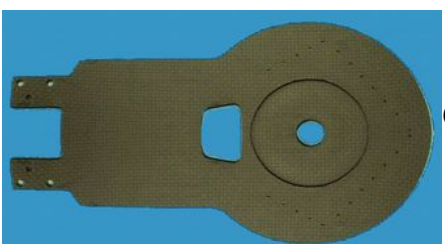
C15-NQZ21-2V

**OKAMOTO**



OKAMOTO GRINDER robot arm

C15-OKMR01-1V



OKAMOTO GRINDER

C30-OKGN1-2V



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Brand	Description	Our code
<b>OLYMPUS</b>		
	OLYMPUS AL1 exchange arm	C45-OY8S1-2V
	OLYMPUS AL1 loading arm	C13-OYU1-1V
	OLYMPUS Microscope loader F arm	C30-OYF1-1V
	OLYMPUS AL110 6" exchange arm	C30-OYAL11E1-1V
	OLYMPUS AL110 8" loading arm	C15-OLYAL11L1-1V
	OLYMPUS Microscope loader exchange arm	C15-OLYML01-1V




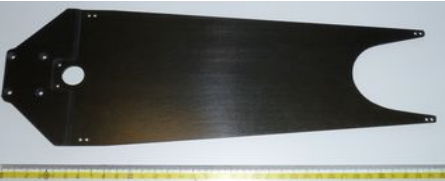


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Brand	Description	Our code	
<b>PVA TEPLA</b>			
	PVA TEPLA loading arm	C15-PVA01L-1V	
<b>RORZE</b>			
	RORZE robot end effector	C15-RZR01-1V	
<b>SEMITOOL</b>			
	SEMITOOL RA100L	C15-STRA1-0M	
<b>SEMIX</b>			
	SEMIX finger arm	C15-SMX01-1V	
<b>SEZ</b>			
	SEZ fork arm	C15-SZF01-1V	
	SEZ fork fingers	Right Left	C15-SZFR01-1V C15-SZFL01-1V



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Brand	Description	Our code
	SEZ robot arm long	C15-SZVT201-1V
	SEZ robot arm short	C15-SZR02S-1V
	SEZ dual robot arm	C15-SZFL201-2V
	SEZ DaVinci 12" robot arm	C30-SZDV01-OM


## SVG

	SVG 90S 5" arm	C15-SV90S5-1V
	SVG 90S 6"	C15-SV90S6-1V

## TAIKOKU

	TAIKOKU Tape remover	C15-TKL01-1V
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## TEL

	TEL MK5 finger arm	C15-TL501-1V
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Brand	Description	Our code
<b>VEECO METROLOGY</b>		
	VEECO METROLOGY 200mm	C30-VF2-1V
	VEECO METROLOGY 300mm	C30-V301-1V
	VEECO METROLOGY VX310	C30-VMVX3-1V

**ZEISS**

	ZEISS AXIOTRON loader 6"	C15-AX106-1V
	ZEISS AXIOTRON loader 8" available also in $\mu$ -holes version	C15-AX108-1V



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