



**Science & Technology**  
Facilities Council



Imperial College  
London

**WARWICK**



## **Finger strip for the FETS RFQ**

by P. Savage

*12th August 2011*

## Finger strip used.....

- The FETS RFQ will use 2 different profiles of Berillium Copper finger strip
- Longitudinal RFQ vane interfaces and transverse section to section interfaces will use

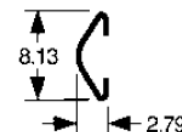
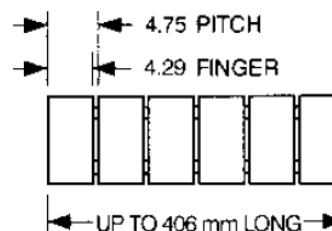
### ECP 0612

#### SYMMETRICAL

##### Performance Range

	25% Compression-50% Compression		
Standard 0.089 Thk.	43 kg/m	to	109 kg/m
"LC" Style 0.05 Thk.	13 kg/m	to	42 kg/m

Material: beryllium copper – .09 mm thick (LC style– .05 mm thick)



- The tuner and probe ports will use:

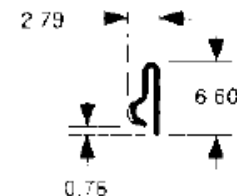
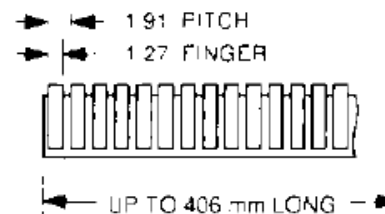
### ECP 0694

#### REVERSE BEND SPHERICAL

##### Performance Range

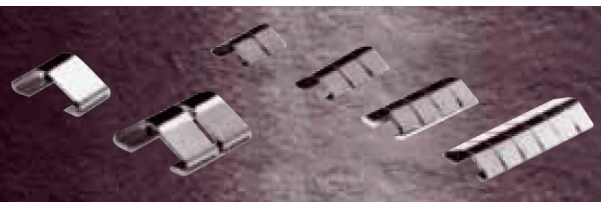
	25% Compression-50% Compression		
Standard 0.15 Thk.	13 kg/m	to	25 kg/m

Material: beryllium copper – .16 mm thick



## Longitudinal and transverse interfaces

# Snap-on Mounting



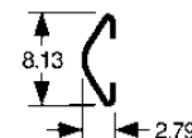
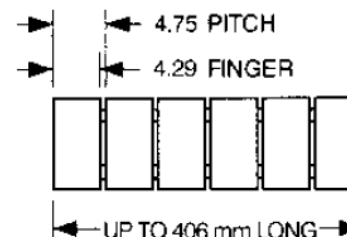
## ECP 0612

### SYMMETRICAL

#### Performance Range

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Material: beryllium copper – .09 mm thick (LC style– .05 mm thick)



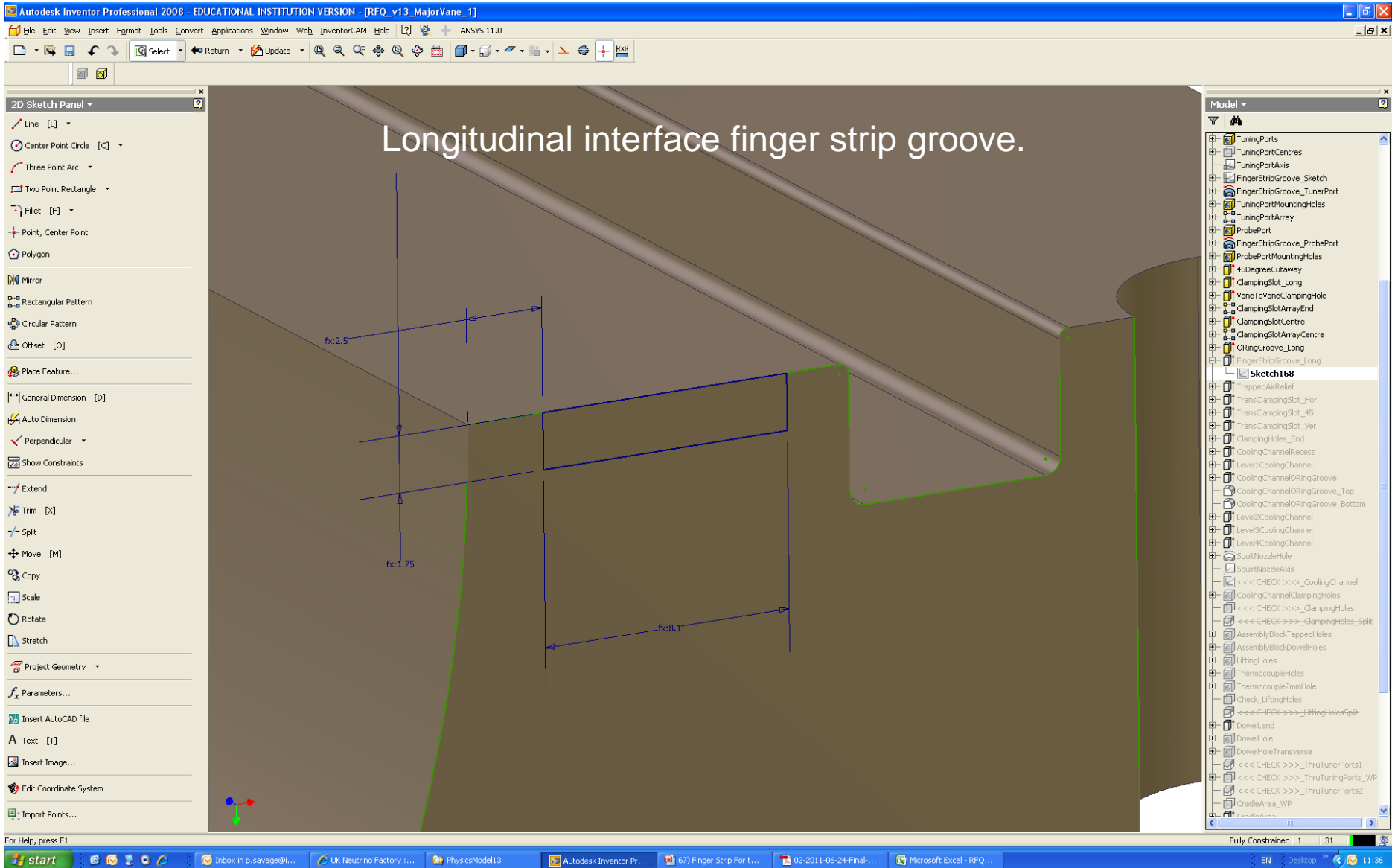
Used for: Longitudinal and transverse RFQ joints.

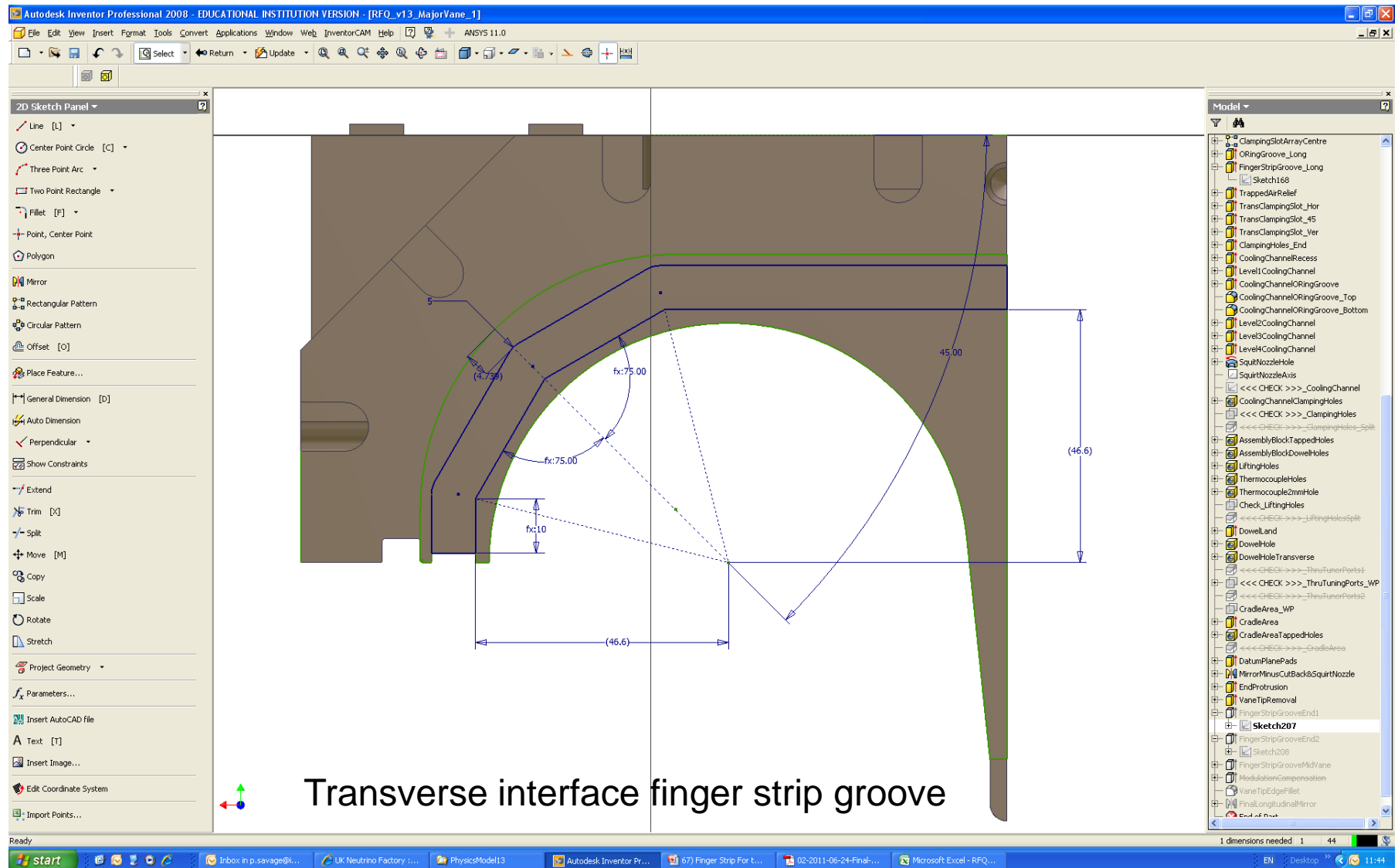
Compression: 25% of 2.80mm = 0.70mm. Groove depth theoretical= 2.10mm.  
50% of 2.80mm = 1.40mm. Groove depth theoretical= 1.40mm.

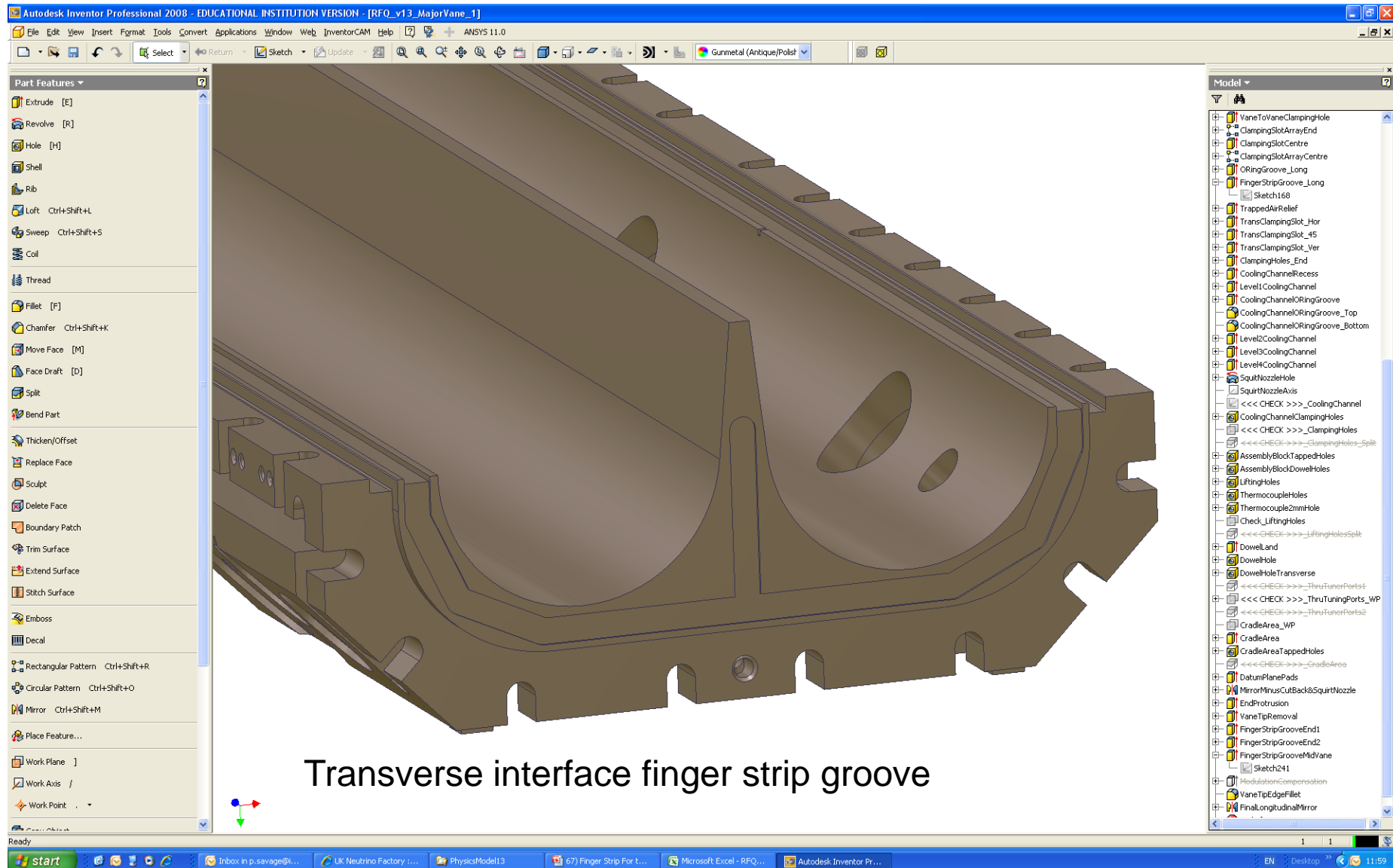
Groove dimensions: Width = 8.10mm +0mm -0.2mm  
Depth longitudinal (Groove on one half side only) = 1.75mm +/- 0.2mm  
Depth transverse (Groove on both sides) = 0.88mm +/- 0.1mm

Supplied by: TBA Electro Conductive Products Ltd.

*P&P Technology no longer offer full range shown in catalogue.*



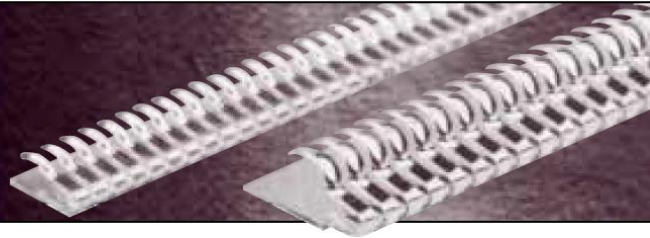




Tuner and Probe port finger strip



# Special Mounting



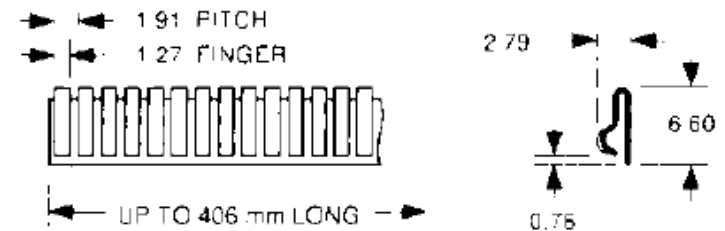
## ECP 0694

### REVERSE BEND SPHERICAL

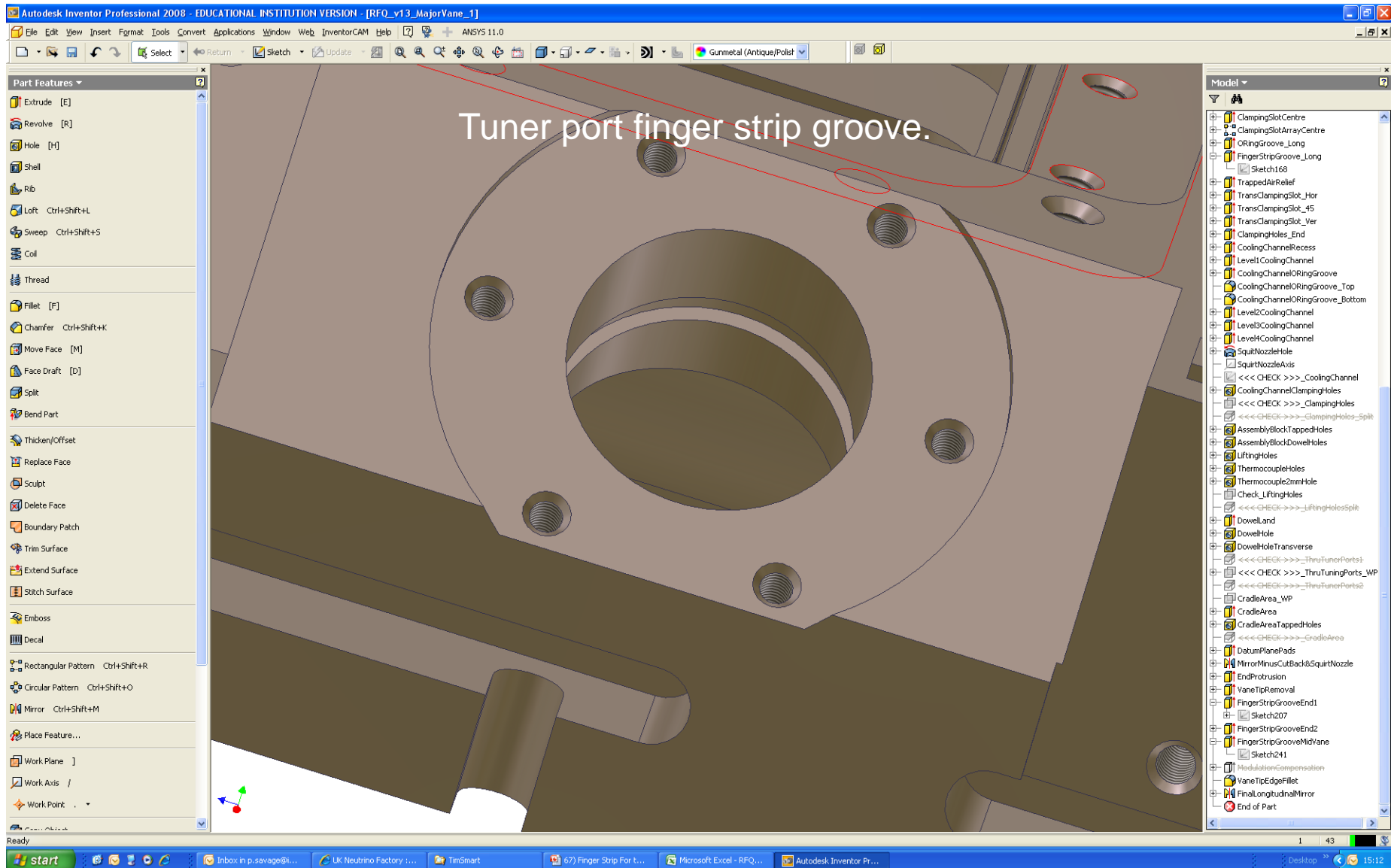
#### Performance Range

	25% Compression-50% Compression		
Standard 0.15 Thk.	13 kg/m	to	25 kg/m

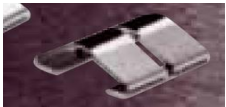
Material: beryllium copper – .16 mm thick



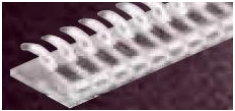
Used for:	Tuner ports & Probe ports
Compression:	25% of 2.80mm = 0.70mm. Groove depth theoretical= 2.10mm. 50% of 2.80mm = 1.40mm. Groove depth theoretical= 1.40mm.
Groove dimensions:	Width = 6.60mm +/- 0.10mm Depth = 1.75mm +/- 0.20mm
Supplied by:	TBA Electro Conductive Products Ltd.



## Why do we need two finger strip profiles?



ECP-0612 cannot be bent into a circle to be used inside the ports.



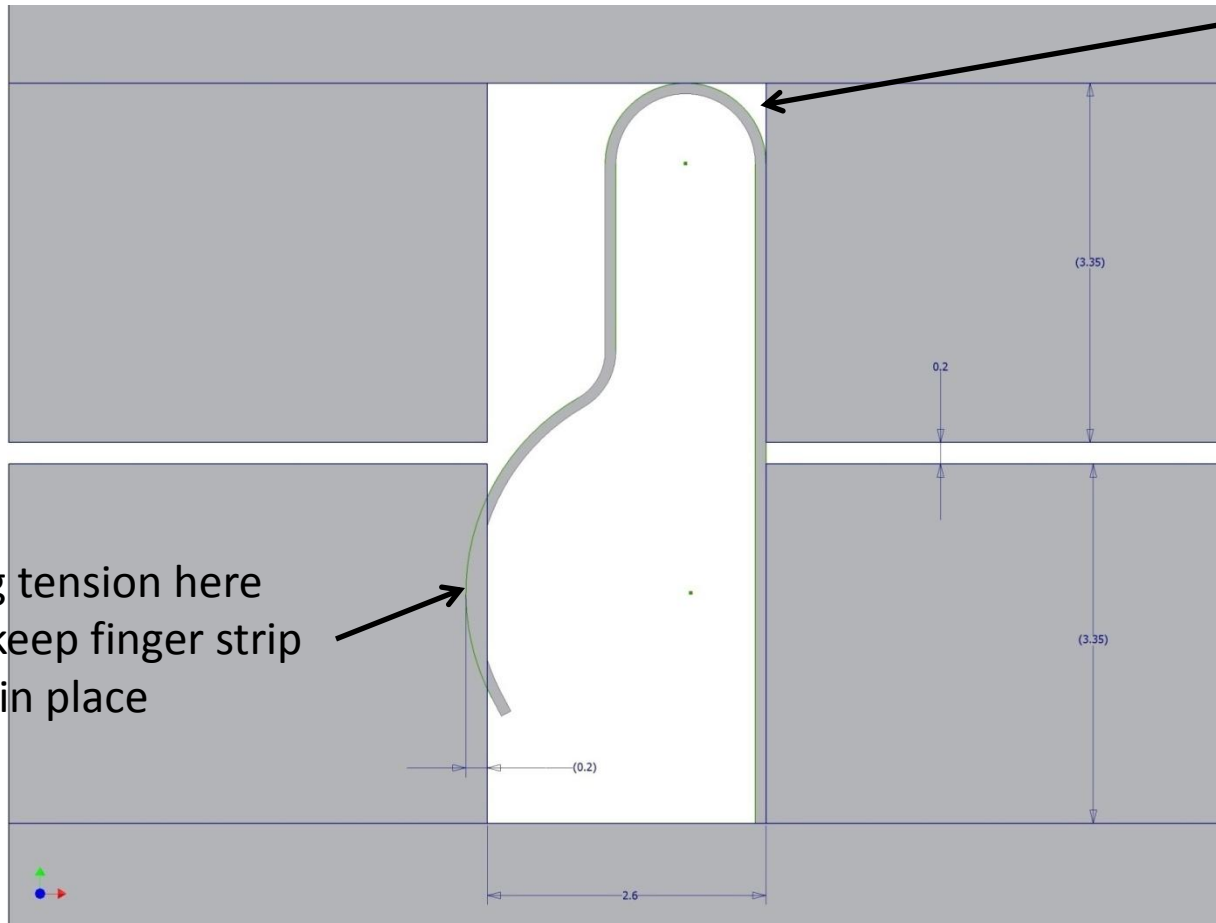
ECP-0694 cannot be retained in a half-depth groove as used for the transverse section to section interface.

ECP-0694 could be used for the longitudinal interface but then the longitudinal and transverse groove dimensions would not match.

A test piece was made to determine whether ECP-0694 could be used 'on end' for the transverse interface therefore allowing the use of one finger strip type throughout. The test revealed that it did not compress well enough.....See next slide.

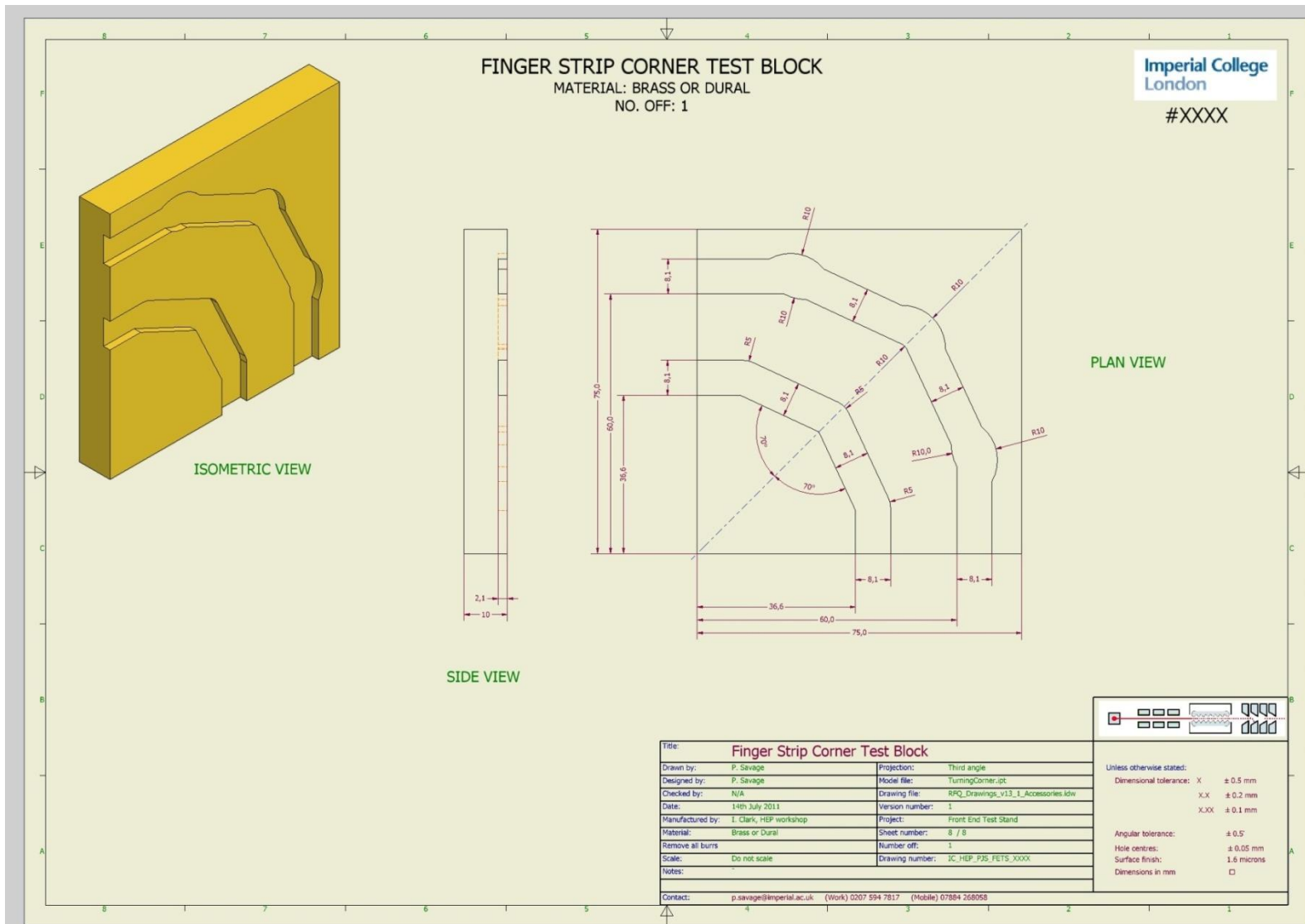
Curvature here should  
help finger strip to 'find'  
incoming slot.

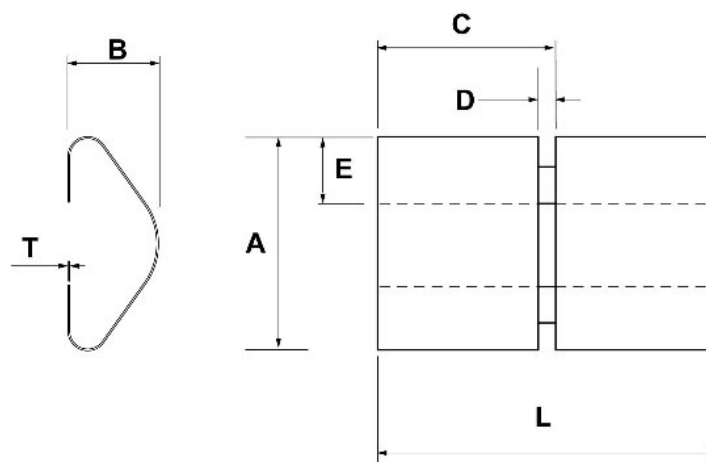
Spring tension here  
should keep finger strip  
in place



[illegible]

## Part to test transverse interface finger strip slot dimensions





	A	B	C	D	E	T	L
CFS-031	7.87	3.05	6.35	0.50	2.28	0.08	XXX
CFS-043	5.00	2.00	3.20	0.50	1.60	0.08	XXX

The finger strip profile CFS-043 was used in an earlier FETS RFQ design. It was chosen for it's narrow width at only 5mm which allows for a wider copper to copper contact surface at the interface. This product was available from P&P Technology but unfortunately has been discontinued. The current design uses the narrowest profile available at 8mm.

End