19/04/2011

- List of things to do before bonding
  - need Pyrex dish for storing more ears
  - store penultimate mass
  - need scales
  - teflon measurement pads
  -

- Stored the Penultimate Mass (ETM04) into it's container again.
  (One-Arm ITM)
- Lifted the ETM02 onto a V-block for measuring the width.

- decided with Betsy not to weigh ETM02 again measurement accuracy of 100 gr required. Actual measurement has been done ±1 gr.

Measurement from polisher reported thick side = 200.15 mm
With ROMER ARM: ETM02 optic thickness (wedged ~~AR~~)

	Measurement #1	#2	#3	|Δ| (1-3)
201.627	201.637	201.641	201.669	0.032
201.395	201.403	201.408	201.422	0.019
201.384	201.411	201.401	201.402	0.010
201.104	201.079	201.128	201.128	0.049

↑ This time w/out "flipping Romer measurement ball probe over when switching from HR to AR.

* on coating (all 4 meas.'s)

Measurement -1.500

			average
200.137	200.141	200.169	200.149
199.903	199.908	199.922	199.911
199.911	199.901	199.902	199.905
199.579	199.628	199.628	199.612

$$\frac{200.15 - 199.60}{340} = \frac{0.55}{340} = \frac{200.149 - 199.612}{340} = \frac{0.537}{340}$$

0.00158 rad = 0.09

CMM Measure plane to plane.

$\theta = 179.922^\circ$ (0.078°)

Vendor said $\theta = 179.923^\circ$ (0.077°)

20/04/2011

Gerardo got advise from Vinnie to define two planes
Then created 4 points on plane 1
Then measure the distance of these points on plane 2 to plane 1
You can select if you want to do ~~probe~~ point : centre or point : probe centre.

→ select ~~probe~~ point : centre (point : probe centre give ~~in~~ 1.5 ~~a~~ mm on your result.

Measurement

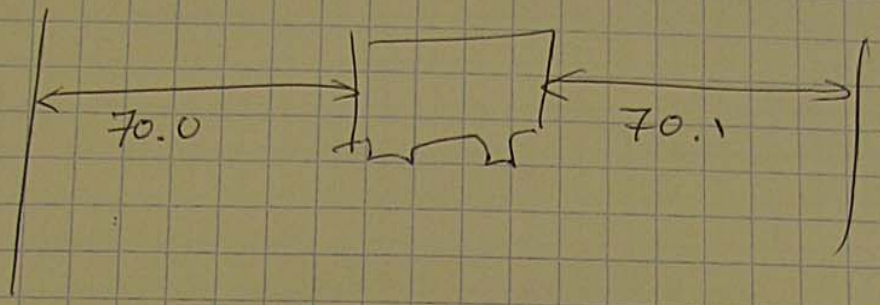
			average
200.160	200.162	200.159	200.161
199.949	199.956	199.943	199.949
199.951	199.946	199.945	199.947
199.738	199.737	199.727	199.734

angle 0.074°

$$\frac{200.161 - 199.734}{340} = \frac{0.427}{340} = 0.00126 \text{ rad} = 0.071^\circ$$

Set banding jig according to vendor number.

Ear banded at 11.10 am.
Measured ear position at 13.45



21 April 2011

Checked the ear bonded yesterday
→ only one tiny speck. Other wise a perfect bond.

Set bonding jig for ear 43

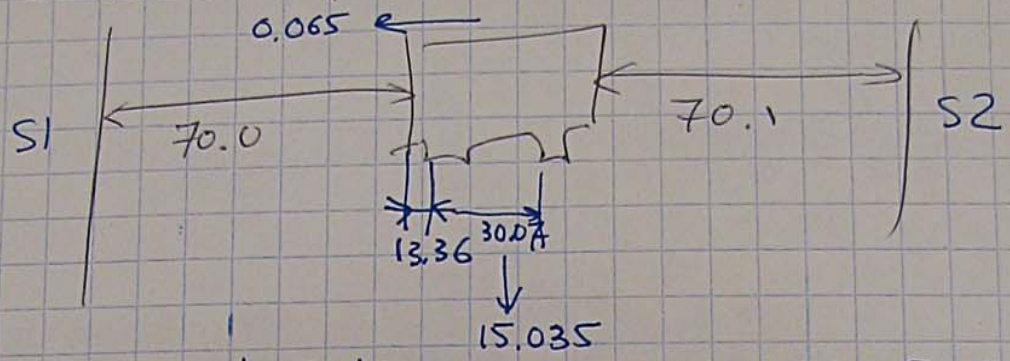
Marielle prepared bonding solution at 10.40

Gerardo and Margot cleaned 84 of ETM02 (with ITM coating)

Bonded ear 43 at 10.30

Set bonding jig according to vendor number.

Ear bonded at 11.10 am.
Measured ear position at 13.45



from edge mass to center ear 70.0 + 13.36 + 15.035 + 1.5 = 99.895

21 April 2011

ear offset 0.06

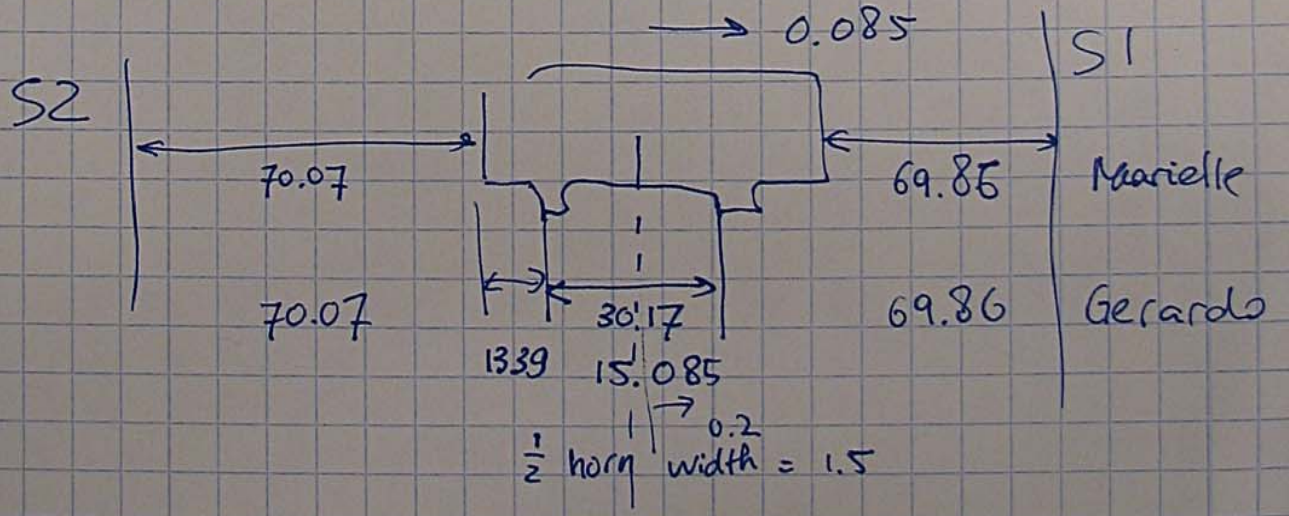
Checked the ear bonded yesterday
→ only one tiny speck. Other wise a perfect bond.

Set bonding jig for ear 43

Marielle prepared bonding solution at 10.40

Gerardo and Margot cleaned S4 of ETH02 (with IPA coating

Bonded ear 43 at 10.30



from edge mass to center ear
70.07 + 13.39 + 15.085 + 1.5 = 100.045

½ width mass 199.92 / 2 = 99.96

ear offset by 0.085 mm

TO DO LIST

- stick teflon pads under V-blocks
- clean other V-blocks and have fresh teflon feet made.

Why offset? IDEAS

- Jigs creeped?
- Mass wider than thought ? according to measurements it might 0.03 mm wider → does not account for whole offset.
- Ear measurements not accurate → could be because of flame polishing
- Jig not set correctly? → double checked that
- Screws of jig too tight? → would cause offset other way
- Jig opens up? → would cause offset other way.

Reneasure jig 1

$X_{j1} = 72.94$ old measurement < 0.05 72.997

$X_{j2} = 132.89$ old measurement < 0.05 132.94

edge $72.94 - 2.93 + 29.89 = 70.01 + 29.89 = 99.90$

This accounts exactly for the error

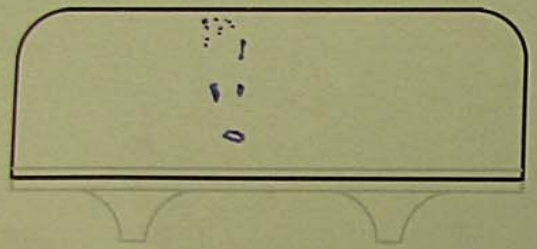
edge $132.89 - 3.01 - 29.975 = 99.905$

~~99.96~~ 100.045

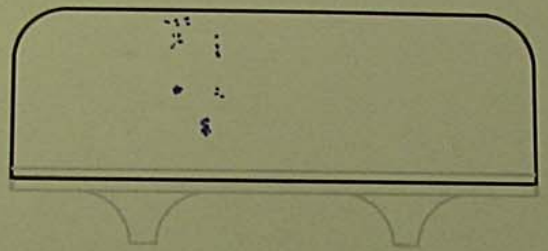
error 0.14 mm

Bond quality monitoring sheet

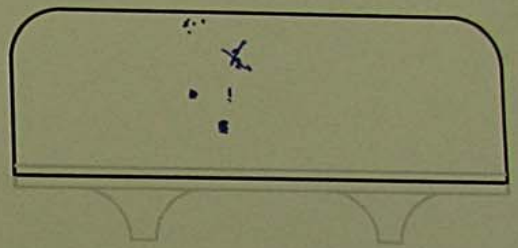
Ear no.	38	Bonding solution	sodium silicate
Mass	ETM02 (with ITM coating)	Vol. concentration	1:6
Bonding flat	S3	Time prepared	10:00 AM
Date and time bonded	20/04/11 11.00 AM	Amount used for bonding	9.6 µl



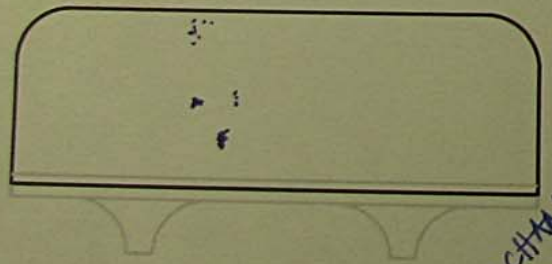
Date: 20 April 2011
Time: 11.15 ~~11.00~~ AM



Date: 20 Ap 2011 (BB)
Time: 11:30 AM

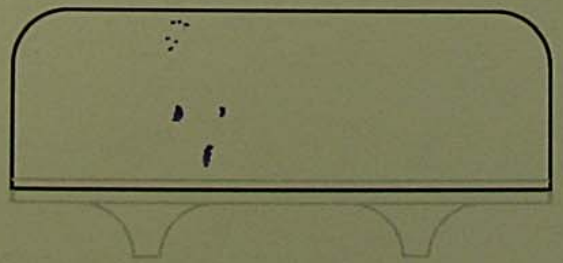


Date: 20 Ap 2011 (BB)
Time: 11:50 AM

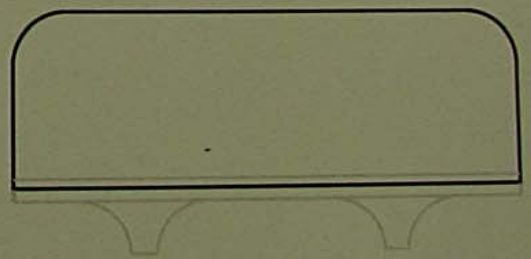


Date: 20 Ap 2011 (BB)
Time: 12:00 pm
NO CHANGE

NO CHANGE
20 Ap 2011
12:20



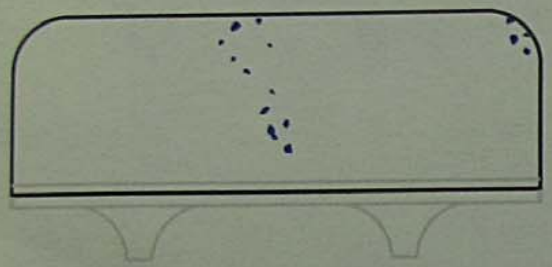
Date: 20 April 2011
Time: 1:15 P.M.



Date: 21 April 2011
Time: 8.50 A.M.

Bond quality monitoring sheet

Ear no.	43	Bonding solution	sodium silicate
Mass	ETM02 (with ITM coating)	Vol. concentration	1:6
Bonding flat	S4	Time prepared	9.40 AM
Date and time bonded	21 April 2011	Amount used for bonding	9.6 µl.

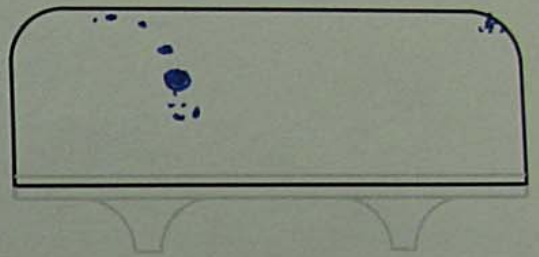


Date: 21 April 2011

Time: 10.30 AM

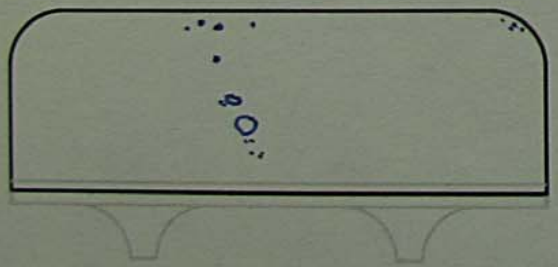
Date: 21 April 2011

Time: 11:00 AM



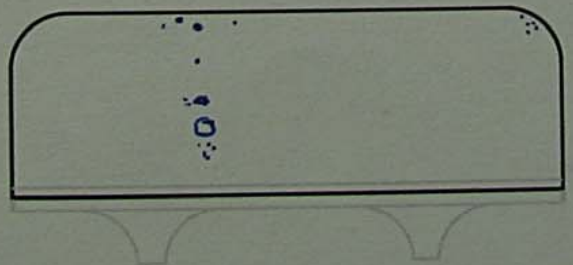
Date: 21 April 2011

Time: 11:30am



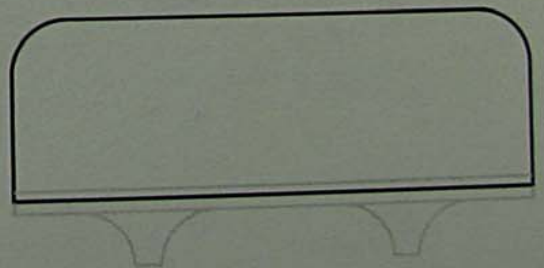
Date: 21 April 2011

Time: 12.00 noon



Date: 21 April 2011

Time: 12.30



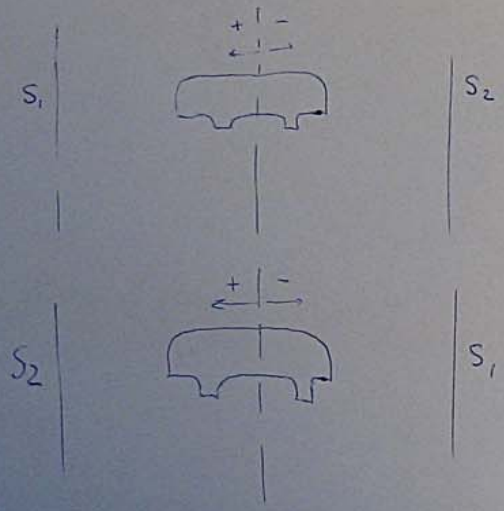
Date: _____

Time: _____

Calculating ear positions

mass	ear	½ width mass	z	side	jig side	s1_earside1	s2_earside2	relevant earside + z	error		jig
ETM02	38	99.96	29.89	s3	left	70.00	70.10	99.89	0.07	tilt	1
ETM02	43	99.96	29.975	s4	right	69.86	70.07	100.045	-0.085	tilt	1
PUM ITM01	70	100.098	30.03	s3	right	70.06	70.09	100.07	0.028		1
PUM ITM01	71	100.098	30.035	s4	left	70.00	70.00	100.035	0.063		1
PUM ETM04	77	100.040	30.05	s3	right	70.00	69.95	100.00	0.040		2
PUM ITM04	78	100.087	29.97	s3	right	70.02	70.06	100.03	0.057	tilt	1
PUM ITM04	84	100.087	30.12	s4	left	70.02	70.06	100.14	-0.053	tilt	1
PUM ETM03	87	100.058	29.96	s3	right	69.93	70.05	100.01	0.047		1
PUM ETM03	89	100.058	29.96	s4	left	70.02	70.00	99.98	0.060		1
PUM ETM04	94	100.040	30.06	s4	left	69.80	70.12	99.86	0.18		2

width error mass made these somewhat bigger



x_{j1} and x_{j2} smaller than we thought
→ this would cause errors of
0.06 and -0.05
+ error width mass could account for this

however tilt error occurs only one more time
other errors are yaw errors
→ in bonds made in april and september.

one error bigger than 0.1 → ETM04 94

jig 2 x_{j1} = 70.03 → if x_{j1} had been 0.129 mm smaller.
x_{j2} = 132.90