



Figures 4a-b. Starting with the anteriors, use the TAD to set the torque and angulation. Adjust the survey base to match the facial/buccal surface of the tooth to the blade of the TAD by using the tilt of the base in conjunction with the fine height adjustment of the TAD (if you are using the LA point, match this to the scribe line in the centre of the TAD blade).



Figure 8. Clean the bracket base well with acetone to remove any grease or contamination. Place the bonding material to the bracket base using an instrument of your choice.

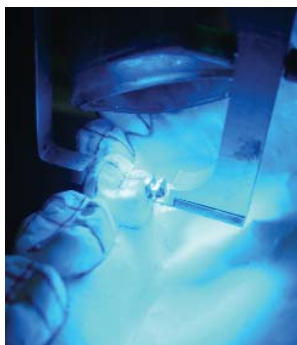


Figure 11. Light cure with a curing light for 30 seconds.



Figure 12. Check again the position of the bracket before moving on to the next one.



Figure 13. Check the angulation and torque for each tooth.



Figure 5. Transfer the model plus the survey base with its programmed torque and angulation setting to the BPD for bracket placement according to your previous height and thickness survey.



Figure 9. Bring the outer jaw into contact with the vestibular face, close the thickness calipers looking at the scale for the required thickness. Stop just short and then tap gently the last adjustment to the final reading. Never pull out and in - this will create an air space in the pad! Bonding material such as Transbond XT from 3M ESPE is good.



Figure 6. Using the BPD column height adjustment and the fine adjustment almost at the top of its range, bring the outer jaw of the caliper almost to the incisal or occlusal edge. Use the fine height adjustment to touch the incisal edge lightly and zero the Mitutoyo digimatic DTI.



Figure 7. Place the bracket on the bracket holder with the calipers open and then place the outer jaws on the vestibular of the tooth. Descend the height by turning the fine height adjustment to the required setting. Try the bracket up to the lingual surface so you will be confident for the bonding position.



Figure 10. Clean around the bracket base with a fine probe to remove any excess bonding material. Be careful not to take out too much!



Figure 14. Check the height and thickness for each tooth.



Figure 15. When bonding the molar tubes, use a special jig. Because the jig increases the distance between the caliper jaws, it is necessary to reset them to zero before placing the brackets.



Figures 16a-b. Follow the same procedure for bonding the tubes, but be sure to have the open part of the jig towards the mesial, otherwise it will be impossible to remove it after bonding. The jig is first released from the jaws (bracket holder) and then slid out from the distal.



Figures 17a-b. After the full arch is finished bonding, check around the resin pads for any voids. If any defects are detected, it can be filled with 'Flowline' to give a smooth finish.



Figures 19a-c. A resin separator is now painted to the vestibular and occlusal surfaces of the model before the transfer tray can be constructed.

Measurement for Lower arch : Mandibular Dentition															
Doctor :		Patient :				Date Impression :									
		47	46	45	44	43	42	41	31	32	33	24	35	36	37
Teeth Present		x	x	x	x	x	x	x	x	x	x	x	x	x	x
Extraction															
Amputation															
Torque		-25	-25	-16	+3	-9	0	0	0	-9	-12	-12	-20	-20	
Torque Lab															
Int. Attachment		1.5	2.5	3.5	3.0	3.5	3.0	3.0	3.0	3.5	3.5	3.0	3.0	3.0	3.0
Thickness		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Width		9.5	9.7	8.5	1.1	1.7	1.3	2.1	1.7	1.6	1.7	1.6	1.7	1.6	1.5

Design of Lower Arch															
Doctor :		Patient :				Date Impression :									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Palate of Measurement	%														

238 No.	Extraction	Shifting
MOLARS	Decide	Decide + Shift
	Ways - Cap	Tube

Distraction	47	46	45	44	43	42	41	31	32	33	24	35	36	37
Rotational Correction														
Right														
Angular Correction														
Torque Modification														
Cap Height														

Figure 18. It is a good idea to record all data to a worksheet including angulation, torque, height and thickness.



Figures 20a-d. Make a hard "Light Cure Blockout" blue key that covers most of the occlusal and vestibular surface, stopping short of the gingival margin by 1.5 to 2mm. Then stick the pre-prepared tooth number to it. Do not place it too close to the bracket or the silicone will not be thick enough.



Figure 21. Then light cure it.



Figure 22. Make some mechanical retention on the keys and light cure again. This will be imbedded in the silicone.



Figure 23. Finished.



Figures 24a-c. Prepare the Memosil (Heraeus Kulzer) applicator and some dishwashing liquid to act as a separator on the fingers. Tip: to gain a longer working time, keep the Memosil in the fridge.



Figure 25. Apply the Memosil with steady pressure on the syringe and create an excess of material to work later. Tip: Always start at the lingual and cover the brackets entirely.



Figure 26. Next, cover the occlusal surface and the retentions.



Figure 27. Move the Memosil around to the facial/buccal surfaces.



Figures 28a-b. Dip your fingers in the dishwashing liquid and then make the transfer tray as smooth as possible. Take care not to make it too thin, especially around the brackets. Use the blue retentions as a guide.



Figure 29. Finished, smoothed tray before trimming.



Figures 30a-b. Leave the tray for around 10-15 minutes and then rinse under cold water. Then using low pressure compressed air, break the seal at the distal edge.



Figures 32a-b. Remove the tray from the lingual side using a blunt waxing knife or similar instrument. Apply pressure under the brackets directly so they are removed with the tray.

Figures 31a-i (left to right from the top). Using a scalpel, trim the transfer tray to the required shape. Remove the excess (using steady firm pressure) to the distal, vestibular and lingual, stopping at the gingival margin.



Figure 33. Light cure again from the inside to ensure the bracket pads are cured.



Figure 34a-b. Finished tray before sandblasting of brackets.



Figure 35. Sandblast the resin pads whilst still in the tray with a micro blaster using 50 micron alumina.



Figure 36a-c. Remove each bracket from the tray and trim the excess resin around the pad with a handpiece. Make smooth using a rubber barrel.



Figure 37a-b. Trim the inter-dental spaces and anything that may restrict an easy insertion in the mouth. The Memosil should be removed from the underside of large brackets or brackets with hooks so that removal of the tray will be easier and not stress any bonding. This way the tray will also not be damaged and can be re-used for any re-bonding.

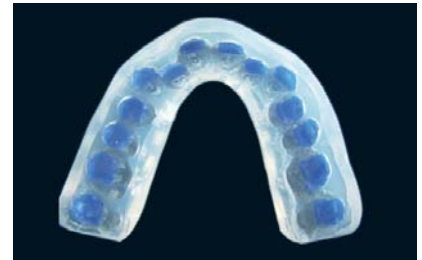


Figure 38. Clean the tray gently with steam and then with water and dry with clean compressed air.



Figures 39a-b. Clean the brackets with a small brush. Dry and then clean the pad with acetone or isopropyl alcohol on a cotton micro brush.



Figure 40. Replace the brackets into the tray using tweezers, steam clean gently, taking care not to move the brackets and then clean again any marks/lines with acetone and the tray is ready.

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About the author

Terry Whitty is the technical editor of eLABORATE and also runs a successful orthodontic laboratory in Sydney's eastern

suburbs where he produces innovative appliances using the latest techniques and technologies including laser welding. He has also lectured throughout Australia and New Zealand on a variety of subjects.

For more information on the TAD or BPD, please contact Terry Whitty on (02) 9313-7971.