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■ CARRIERE® MOTION 3D™ Q&A



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CARRIERE®
MOTION 3D™

CLINICAL ADVICE PROVIDED BY:



Dr. Luis Carrière

Dr. Carrière received his dental degree from the University of Complutense in Madrid, in 1991. He then attended the University of Barcelona where Dr. Carrière completed his Orthodontic training and received his Master of Science in Orthodontics in 1994. In 2006, he received his Doctorate in Orthodontics, Cum Laude, from the University of Barcelona. Dr. Carrière was the Winner of the prestigious "Joseph E. Johnson Award" and the International Design Award Delta Gold ADI-FAD 2009 for the "Carriere Distalizer MB." Dr. Carrière is also a Member of the Editorial Review Board for the American Journal of Orthodontics and Dentofacial Orthopedics. As an invited professor of several Orthodontic departments throughout the world, Dr. Carrière lectures internationally when he is not treating patients in his private practice in Barcelona, Spain.



Dr. Dave Paquette

Dr. Paquette received his dental degree from UNC School of Dentistry in 1979 and a Master's in Pediatric Dentistry from UNC in 1983. His Master's thesis won a national research award that same year. He is board certified by the American Board of Pediatric Dentistry. He obtained his Master's degree and specialty certificate in orthodontics from the St. Louis University in 1990. Dr. Paquette's Master's thesis in orthodontics won the coveted Milo Hellman award in 1991. He is an active member of the Schulman Group. Dr. Paquette is passionate about advancing the art and science of orthodontics. He has published numerous articles and lectures nationally and internationally. Dr. Paquette maintains a private practice in Charlotte, North Carolina.



Dr. James "Jep" Paschal

Dr. Paschal received his Bachelor of Science degree from Emory University in 1989 and his Doctorate of Medical Dentistry in 1993 from the Medical College of Georgia, where he graduated with honors, received many scholastic achievement awards, and was one of a few select students inducted into the National Dental Honor Society, Omicron Kappa Upsilon. Dr. Paschal continued his education at the University of Texas Health Science Center at San Antonio. There he completed a residency in Prosthodontics (a specialty in restorative dentistry and implants) in 1996, a Master of Science degree in Biomaterials & Prosthodontics, and a General Practice Residency in 1997. Dr. Paschal maintained a private practice in Prosthodontics and Reconstructive Implant Dentistry in Atlanta for five years before returning to graduate school to complete a residency in Orthodontics at the University of Rochester Eastman Dental Center. Dr. Paschal currently maintains a private orthodontic practice in both Madison and Lake Oconee, GA.

■ Carriere MOTION 3D

Class II Appliance

1. Which types of cases can the Carriere® MOTION 3D™ Class II Appliance be used for?

- Class I, Crowding
- Class II, Div 1
- Class II, Div 2
- Class II, Open bite
- Class II, Deep bite
- Class II, Blocked out upper cuspids
- Class II, Subdivision, left or right (unilateral)
- Mixed Dentition (Phase 1)

2. What are the advantages of using the MOTION 3D Appliance in mixed dentition?

- Asymmetries correction
- Improved airway
- Psychosocial issues (self-confidence)
- Helps to correct bad habits
- Prevent crowding and impactions
- Treats developing skeletal problems

3. In what types of cases is the MOTION 3D Class II Appliance not a suitable option?

Like with all orthodontics, there are occasionally underlying conditions that contraindicate MOTION 3D, such as Micrognathia and periodontal issues.

4. Does the MOTION 3D Class II Appliance contain nickel?

Yes, the MOTION 3D Appliance contains 2-5% nickel, similar to other stainless steel orthodontic appliances.

5. Does the MOTION 3D CLEAR™ Class II Appliance contain nickel?

Yes, the molar pad is made of stainless steel and contains 2-5% nickel. The arm of the MOTION 3D CLEAR Appliance is made of an advanced medical grade polymer.

6. Do the MOTION 3D Appliances contain gluten?

No, the MOTION 3D Class II and Class III Appliances do not contain gluten.

7. Do the Carriere MOTION 3D Force 1 and Force 2 elastics contain gluten?

No, the Natural Latex and the Clear Force 1 and Force 2 elastics do not contain gluten.

8. I have a patient who needs to have an MRI, can the MOTION 3D Appliance be worn?

Please consult with the radiologist. If in doubt, remove the appliance. The MOTION 3D Appliance is made of 17-4 stainless steel.

9. Do you have a general recommendation about removing wisdom teeth prior to treatment with MOTION 3D Class II or MOTION 3D Class III?

Generally wisdom tooth removal is not required for Class II treatment with the MOTION 3D Appliance, however, it is beneficial for Class III treatment.

10. How do you bill insurance for the MOTION 3D Appliance?

Many clinicians do not bill separately for the MOTION 3D Appliance. The appliance is typically included in the comprehensive treatment fee for AP correction cases.

11. I received a set of the MOTION 3D Class II Appliance. How can I tell which is the RIGHT appliance and which is the LEFT one?

There are a few different ways to tell which is RIGHT and which is LEFT:

1. Each appliance is packaged in a tube.
The RIGHT appliance is in the tube with the red cap, the LEFT appliance is in the tube with the black cap.
2. The RIGHT appliance has 2 color dots on the bar while the LEFT appliance has 1 color dot.

MOTION 3D

Class II Appliance (Continued)



3. On the molar piece, there is a small "R" and "L" on the gingival edge to indicate RIGHT and LEFT.
4. The molar pad includes a small notch that fits into the molar groove to facilitate placement. The notch is shaped like a triangle and should be on the occlusal edge of the molar pad. The tip of the triangle should be pointing up for placement.

12. What will happen if the *MOTION 3D* Class II Appliance is placed on the opposite side? For example, the right appliance placed on the patient's left?

It is not ideal. The engineered stops will not work as designed and be reversed, which will prevent intended uprighting (tipping).

13. Can I modify the *MOTION 3D* Class II Appliance?

It is not recommended to bend, twist, or modify the *MOTION 3D* Class II Appliance.

14. Do I need to follow the elastic protocol indicated?

YES! Over the years, the elastic protocol we recommend has been refined and proven to be the most effective. In most cases, except when using a shorty from lower or upper 4-6, with the hook on the upper/lower 6, you will start with Force 1, for 4 weeks. After the 4th week, you would transition to Force 2 (except when using shorty Class III with a hook on an upper 7, when using the standard Class III Appliances and in mixed dentition Class II cases). See the Elastic Protocol for complete details.

15. Can I use non-Cariere elastics I already have in my office?

No. We highly recommend using the *Cariere* Elastics, Force 1 and Force 2, even if you believe the elastic forces in your office are equivalent. Through **Dr. James A. McNamara Jr., DDS, MS, PhD**, who measured the forces of several brands of elastics, we learned that not all elastics are equal.

Dr. McNamara's Measurements:

Vendor	Size	Strength	Grams
HSO Cariere Force 1	1/4"	6.0 oz	340
Ormco "Ram"	1/4"	6.0 oz	250
AO "Sea Lion"	1/4"	6.0 oz	275
GAC "Korea"	1/4"	6.0 oz	280
Unitek "Fred"	1/4"	6.0 oz	300

Dr. McNamara's Measurements:

Vendor	Size	Strength	Grams
HSO Cariere Force 2	3/16"	8.0 oz	600
AO "Cheetah"	3/16"	8.0 oz	420
Unitek "Roberto"	3/16"	8.0 oz	640

16. Do Force 1 and Force 2 Latex Free Elastics have the same forces as Latex Force 1 and Force 2 Elastics?

Here is what we know from industry studies' results:

- Breaking force comparison: non-latex elastics had greater breaking force than latex elastics.
- Force degradation: greater in non-latex elastics compared to latex elastics.
- Percentage of load remaining: significantly greater in latex elastics than non-latex elastics
- Latex elastics are the preferred choice, except when patients exhibit allergic manifestations to latex.



Consequently, due to the difference in material properties between non-latex and latex elastics, it is recommended patients wearing non-latex elastics change their elastics every two hours instead of every four hours.

17. Is the elastic protocol different if using the Force 1 and Force 2 Clear Elastics versus the standard Force 1 and Force 2 Elastics?

Due to the difference in material properties of non-latex elastics compared to latex elastics, it is recommended the patient change their Clear Elastics every two hours instead of every four hours.

18. What type of adhesive is recommended for bonding the MOTION 3D Appliance?

Continue to follow the same bonding protocol you use in your office for brackets. After measuring for the correct size, do not try on the appliance as it may contaminate the bonding base. However, we recommend using twice as much adhesive on the pads as compared to a bracket.

19. What type of correction does the MOTION 3D Appliance create?

All corrections are both dental and skeletal. The MOTION 3D Appliance creates changes in the three planes of the space. However, for the younger, still-growing patient, more changes will be accomplished; the appliance has both skeletal and dental effects.

In non-growing individuals, you will see mostly dental correction with a profile change due to the repositioning of the condyle.

20. For the MOTION 3D Class II Appliance, what percent is skeletal change vs. percent mandibular change when correcting the bite?

Like all Class II correctors, it all depends on age and individual response. The younger the patient, the more likely they are to have more mandibular growth. There is no set amount, no more than any other Class II corrector.

21. What is the proper position to place the MOTION 3D Class II Appliance?

The MOTION 3D Appliance should be placed parallel to the occlusal plane. The cuspid pad is bonded to the mesial 1/3 of the tooth. Make sure NOT to bond it to the middle of the tooth like a bracket; this will cause the pull from the

elastics to be straight down and back instead of facially and distally, which could cause the canine to go into crossbite. The molar pad includes a small notch that fits into the molar groove. Be sure the molar pad is bonded horizontally, or even slanted slightly upward, to avoid over extrusion of the canines. This ensures the automatic stop will be utilized.

22. What are the indications for using the MOTION 3D "Shorty" length (<20 mm) from 4-6?

A "shorty" length is often recommended when:

- Canines are obstructed
- Canines are too high
- Canines are mesially rotated
- Canines are too extruded
- Canines are displaced too buccally or palatal



23. In cases that have high canines but the patient wants to use clear aligners, can I still bond 3-6?

Yes, in this scenario, you can bond the MOTION 3D Appliance from 3-6. This will help to extrude and level the canines to make the case simpler when moving into clear aligners.

24. What should be bonded to the lower 6 or 7 to connect the elastics to the MOTION 3D Appliance?

We primarily recommend the Carriere MOTION 3D Sidekick™ Bondable Hook, but a bondable buccal tube or a molar band are also options.



25. When do I remove the MOTION 3D Appliance?

Once the molars are in a Class I position, and the canines have ¼ cusp of overcorrection. It is important to overcorrect to a super Class I position. There is always a little bit of relapse once the MOTION 3D Appliance is removed, like many Class II correctors, so ultimately having a super Class I position allows the teeth to end in the proper position.

MOTION 3D

Class II Appliance (Continued)

26. Should I leave the *MOTION 3D* Appliance in longer to get the growth of the mandible, like the *Herbst* Appliance. 4 months doesn't seem to be enough time. Should I leave the *MOTION 3D* Appliance in for 6 months or longer?

If the patient is rapidly growing, it is recommended to have them wear the elastics at night time only for same length of time as it took for correction.

27. Which molar should the *Sidekick* Hook or buccal tube be placed on? The first molar or the second molar?

If the second molar is available, and there is enough crown surface, we recommend placing on the 7. The force vectors are more favorable when using the second molar as compared to using the first molar. However, with either the first or second molar, movement will still happen.

28. Can the molar overcorrect with the *MOTION 3D* Appliance?

The *MOTION 3D* Appliance has a ball that is connected to a built-in socket in the molar pad. The molar pad ball articulates in the socket. The ball and socket joint provides maximum freedom of movement but also has built-in stops that allow the molars to move directly to their desired position while preventing any unwanted over rotation or tipping.

29. What is the average treatment time using the *MOTION 3D* Class II Appliance in permanent dentition?

Three to six months depending on bone density, the age, and compliance of the patient. There are always some limited cases where the treatment can last longer depending on the patient's age, bone density, and lack of compliance.

30. What is the average treatment time for Phase 1 patients?

It is recommended to overcorrect with Phase 1 patients to $\frac{1}{2}$ cusp of the canine because the occlusal anatomy is not stable or consistent; it is not designed to occlude with the molars.

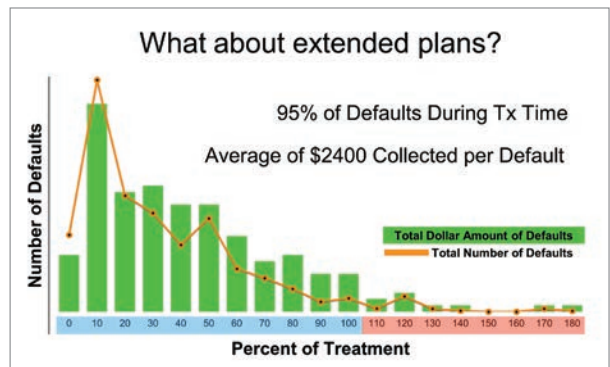
Class II Correction: 5-6 months - correct to an over corrected Class I, Class III in the posterior

Class III Correction: 4-5 months - overcorrect $\frac{1}{2}$ cusp into Class II.

Maintain elastics at night for as long as the correction took for both Class II and Class III.

31. With shorter treatment times in the *MOTION 3D* Appliance, are patient default payments more prevalent?

Nationwide, extended payment plans past treatment completion have not been associated with default. When patients default on payments, typically, it is at the beginning of treatment.



*Data provided by OrthoFi™

32. When is the ideal time to treat Phase 1 patients with the *MOTION 3D* Appliance?

Depending on the patient's case, we have found that the ideal time is usually 7-9 years old when the lower first molars are erupted, and the upper first permanent molars are erupted. Use the upper six and primary canine, with at least $\frac{2}{3}$ of the root unresorbed, for placement.

33. What appointment intervals are recommended for checking progress?

Normally you check every month, or every five weeks, to see how it is progressing, boost compliance, and energize the patient. The appointments may be done in person, or if you prefer by way of pictures. We have seen cases where the doctor was able to check the appliance remotely. Patients simply send pictures of their occlusion every month.

34. What should I do if I currently schedule 8-10 week intervals?

Only change your first appointment to four or five weeks when cases require the patient to change elastic forces, then you can keep your regular schedule.

35. Why not use brackets on the lower arch in Class II cases?

Having adequate anchorage on the lower arch is very important. Brackets and wires could allow the incisors to procline. In order to disclude the teeth and maintain anchorage, we recommend using a rigid *Essix*® retainer (0.040 ACE material is generally recommended).

36. I have a patient who already has brackets on the lower arch. Can I use the *MOTION 3D* Class II Appliance on the upper arch? If this is OK, what wires are recommended?

Although it is not ideal, yes you can. It is recommended to use a 19x25 SS or CNA or pretorque *Cu™ Nitanium®* to avoid lower incisor flaring. However, having brackets on the lower arch does introduce competing forces to the *MOTION 3D* Appliance and treatment may slow.

37. If the *MOTION 3D* Class II Appliance measurement is in-between sizes, what size should be selected?

If additional molar rotation is desired, select the smaller size. If less or minimal molar rotation is needed, select the larger size. In general, you need to make sure that the cuspid pad “hugs” the cuspid or is placed on the mesial 1/3 of the crown.



38. Is the *MOTION 3D* Appliance still suitable if the molars are distally rotated?

Yes. In a full Class II, if the molars are in perfect rotational position, the appliance will already be in position with the collision point that is built into the design. The automatic stop is engaged. The *MOTION 3D* Appliance will still ensure space is created, and the Class II malocclusion is corrected, although it may take a little longer.

39. How do you transition from the *MOTION 3D* Appliance to clear aligners?

Option 1: Remove the *MOTION 3D* Appliance and scan the patient's teeth. Create a retainer to hold the upper arch in place while the clear aligners are being manufactured. Also, the patient should continue wearing their *Essix* retainer.



Option 2: Scan the patient's teeth with the *MOTION 3D* Appliance in place. Virtually remove the appliance either in-house or ask your aligner supplier to remove it for you. After scanning the patient, send them home with the *MOTION 3D* Appliance on and have them wear Force 1 Elastics at night only. When you receive the aligners, bring the patient back to the office, remove the appliance and start aligner treatment.

(For SLX™ Clear Aligners, please use Option 1)

40. How much movement should be expected after the first 4 weeks using Force 1 Elastics? Do you have an estimate in millimeters? Also, how much movement will be expected after the next 4 weeks using Force 2 elastics?

There is a lot of variability depending on patient compliance and biology. Generally about 1 mm in the first 6 weeks then quite variable. If it is bonded to the canine, the canine will be a little mobile, some space would be opening up mesial to the canine and there would be some molar rotation.

MOTION 3D

Class II Appliance (Continued)

41. I have a patient who is very compliant and wears their elastics. However, there was no movement after three months (with two months of Force 2 elastics).

There are two potential causes for this:

1. This situation could happen with patients who have a strong build, with dense bone. These patients tend to have heavy occlusal forces which may slow down tooth movement. It is not a frequent occurrence, however if it happens, double-up with Force 2 Elastics at night if bonded to the lower 7s or double-up with a Force 1 and a Force 2 Elastic if bonded to the lower 6s. In 95% of the cases, it will jumpstart the movement.

2. Check if the upper canine roots are in the buccal plates. The buccal plates are very dense bone with little vascular supply. If the canines are lodged in the buccal plates, the teeth will move very slowly, if at all. In order for the roots to move easily, we want them to be in the medullary bone instead. If you find the canines are in the buccal plates, remove the standard length *MOTION 3D* Appliance(s) and replace them with a "Shorty" length (<20 mm) from the first molar to the first premolar. The "Shorty" length creates fast movement and will move the teeth as planned.

42. We have tried the recommendation of "after three months of non-movement to double up on the Force 2 Elastics at night". However, due to the thickness of the Force 2 Elastics, the patient is unable to get two bands to hook onto the small hook on the *MOTION 3D* Appliance. Any recommendations for this problem?

We recommend hooking the elastic around the *Sidekick* Bondable Hook or bondable buccal tube hook first, then stretch it forward and around the hook on the *MOTION 3D* Appliance.

43. How do you recommend the patient place and remove their elastics with the *MOTION 3D* Appliance?

We have found it is easier for the patient to hook the elastic first to the molar hook and then stretch it forward to the hook on the *MOTION 3D* Appliance. It is the same for removal. Remove the elastic from the molar hook first.

44. Can you use the *MOTION 3D* Appliance immediately on patients who have a crossbite?

Yes, always start with the *SAGITTAL FIRST*[™] approach using a *MOTION 3D* Appliance. It is important to place some build-up on the upper molar(s) with the *MOTION 3D* Appliance.

45. For unilateral cases, should I use only one *MOTION 3D* Appliance?

For unilateral cases, use *MOTION 3D* Appliances bilaterally. On the Class I side, have the patient wear Force 1 Elastics at night only, and on the Class II side, follow the normal elastic protocol. If a patient only wears a *MOTION 3D* Appliance on the Class II side (unilaterally) and no *MOTION 3D* on the Class I side, it may create a midline shift, and it could affect the occlusal cant on one side, or reduce the efficacy of treatment since the patient's mandible shifts to the opposing side and can decrease elastic pull on the Class II side.

46. Can I start clear aligner treatment in conjunction with the *MOTION 3D* Appliance?

Yes, it is possible. Some clinicians like to start correcting the lower arch with clear aligners when correcting the AP with the *MOTION 3D* Appliance. The only exception will be if you are concerned about anchorage or incisor flaring. In this case, it is best to wait and use the lower *Essix* as a method of anchorage, and start the treatment with clear aligners after the Class II is corrected.

47. If a patient has a crown on the upper first molar, would you advise bonding to the second molar and first premolar?

If it is a gold or metal crown, yes, bond to the second molar and the first premolar. If it is a ceramic crown, it is not a problem. You can bond directly to ceramic crowns with the same techniques used as with brackets.

48. Can I use the *i-CAT*™, *iTero*® or *TRIOS*® scan to measure for the *MOTION 3D* Appliance accurately?

Yes, you can use the *i-CAT*, *iTero* or *TRIOS* scanners to measure for the *MOTION 3D* Appliance. When using the linear measurement, round up to the longer size.

49. Can I use a palatal expander before using the *MOTION 3D* Class II Appliance?

The recommendation is to follow the *SAGITTAL FIRST* Philosophy and place the *MOTION 3D* Class II Appliance first. It is possible the RPE will press the roots into the buccal plate. Therefore, address the transverse dimension once the case is in a Class I occlusion.

50. I have experienced some rotation of the lower molars, in some cases. What is causing this?



This rotation can happen when the lower *Essix* is not covering the entire arch, including covering the molars, or when the cut around the buccal tube or *Sidekick* Bondable Hook in the *Essix* is too broad and

does not hold the molars completely. It is recommended to cut a very small piece of the *Essix* or lower retainer that just fits the buccal tube or the *Sidekick* Hook while holding the lower molars snugly, preventing rotation. Even if the *Sidekick* Bondable Hook is bonded to the lower 6s, the *Essix* retainer should cover the entire arch including the lower 7s, with a small window cut out around the *Sidekick* Hook. Or, it is possible the patient is not wearing their *Essix* all of the time.

51. Is there a preferred method to place the *Sidekick* Bondable Hook?

The *Sidekick* Hook should be bonded to the mesial cusp of the first or second molar. The hook should be positioned/oriented along the same line as the *MOTION 3D* Appliance hook when the patient is biting down. This placement facilitates easy engagement and superior performance of the *Carriere* Force 1 and Force 2 Elastics.

The *MOTION 3D Sidekick* Hook bonding procedure is the same as bonding *MOTION 3D* Appliances and metal brackets.



52. Does the *MOTION 3D* Appliance change the mandibular plane (MP) as well as the occlusal plane (OP)?

Research conducted at St. Louis University - Center for Advanced Dental Education indicates that the mandibular plane tends to stay the same, so the occlusal plane change is primarily dentoalveolar, and with a Class II, the mandible postures forward about a millimeter as the condyle repositions.

53. How does the *MOTION 3D* Appliance treat an open bite?

By intruding the molars and extruding the canines, the *MOTION 3D* Appliance closes the open bite from the canines to premolars/molars. The patient then repositions. It is recommended to use tongue tamers, especially behind the lower incisors, and sometimes behind the upper incisors.

54. Is the *MOTION 3D* Appliance equally effective in low angle, as well as high angle, or does it depend if they are Class II or Class III?

Yes, it is as effective in high and low angles, although like all other low angle, deep bite Class II patients, the teeth tend to move more slowly and bite opening is more difficult.

MOTION 3D

Class II Appliance (Continued)

55. With the *MOTION 3D* Class II Appliance, will the occlusal plane (OP) rotate clockwise? If so, will it make the upper incisors extrude which would increase incisal display and gingival display?

The upper incisors will extrude a little if placed on the canine. If you want to minimize the extrusive component, use a “Shorty” length and bond to the premolars. This will help reduce vertical changes due to the lingual cusps on the 4s.

56. I have a patient with a Class II on one side, and a Class III on the other side. Which one do I treat first, or can I treat them at the same time?

In general, it is recommended not to use both Appliances at the same time, unless correcting an occlusal cant. For most of these cases, correct the arch with the midline discrepancy first with full-time elastics on the treatment side, and night only on the passive side. Then switch and correct the other symmetrically.

57. Should I use a plastic primer when using the *MOTION 3D CLEAR* Class II Appliance?

It is not necessary. Some of our Key Opinion Leaders (KOLs) do, and others do not.

Here are some tips from our KOLs to increase bond strength:

- Place the cuspid adhesive onto the surface of the cuspid teeth first, instead of on the pad. Then press the pad onto the adhesive that is on the tooth, with a small tool. Ensure the adhesive penetrates throughout the ridges.
- While light-curing the cuspid pad, continue pressing on the cuspid pad simultaneously with a tool, preventing any air bubbles to stay within the ridges.
- Place extra adhesive on the cuspid pad and keep a small amount around the ridge of the cuspid instead of cleaning up all the flash, so that once it is cured, the adhesive forms a small ridge around the peripheral portion of the pad.

58. What tools do I need to place a *MOTION 3D* Appliance?

- Prophy Paste
- Adhesive Kit (etch, primer, adhesive)
- *MOTION 3D Sidekick* Hook or bondable buccal tubes
- *MOTION 3D* Instrument
- Force 1 and Force 2 Elastics
- *Essix* A+ .040

59. For bite turbos, do you use a flat plane splint when bicuspids are interfering with distalization?

If using the *MOTION 3D* Class II Appliance, then the lower *Essix* tray should provide the disclusion.

60. Do you have any tips for debonding the *MOTION 3D* Class II Appliance?

The canines will be a little mobile due to the patient properly wearing their elastics. Have the patient bite down on a cotton roll to stabilize it. **Dr. Paquette** uses an old ligature cutter to debond. Debond the cuspid pad first by placing the instrument edges on the occlusal and gingival edges, gripping from distal towards mesial, and squeezing. For the molar pad, there are two grooves to help with debonding. Remind the patient to bite down on the cotton roll. Get the edges of the ligature cutter into the two grooves and gently squeeze. Do not use a band remover. Sometimes the adhesive on the molar pad may look like some enamel came off, but when you polish, you can see that it did not. It is just simply an impression of the pad that is left.

61. My patients complain about the gap they see between the cuspids and the laterals as the *MOTION 3D* Appliance corrects the malocclusion. How do I address this complaint?

This gap will happen during treatment and should be mentioned the day the *MOTION 3D* is placed. It can be used as a goal for the patient to achieve. It is important to let the patient know it will not remain after the *MOTION 3D* Appliance is

removed and treated. It is the result of creating additional space in the arch. It should also be explained to your patient that if you do not see the gap being created it is directly tied to how much they are wearing their elastics. The gap is a clear goal to achieve for you and your patient. As you see the gap increasing, congratulate the patient.

Class II Treatment

62. When treating mixed dentition cases, I often see a transverse component (maxillary expansion). How should I proceed with my treatment plan? Should I address the maxillary expansion first, or concomitantly with the AP correction, or should I start treating the AP correction?

In Class I malocclusion, in phase I or mixed dentition, when there is a transversal discrepancy requiring expansion, you should always expand and correct the transverse.

In Class II malocclusion, in phase I or mixed dentition, where you want the mandible to come forward, and also address the transversal deficiency, you should always solve the sagittal relationship first, then the transverse. Solving the sagittal dimension first will take about three to four months. There is no need to stabilize the result because you move to the transverse correction next.

In Class III malocclusion, in phase I or mixed dentition, where there is a transverse deficiency, you can correct both simultaneously, the sagittal dimension and the transverse deficiency.

63. My patient is missing their UL6, and there is an 8 mm space between the UL7 and UL5. The problem with that is that the pad for the UL6 would be too large for the UL5, and I am afraid that it will not fit well.

If you have to bond a molar pad to a second premolar, just add a nice amount of bonding material on top of the posterior pad of the *MOTION 3D* Appliance so it will create the thickness to adapt the base to the premolar.

64. When a patient has a bilateral posterior crossbite, do I expand first?

With a bilateral crossbite, you do not want to

expand first because then the roots will be in the facial plate and will prevent the proper function of the *MOTION 3D* Appliance. Correct the sagittal first, then address the other challenges.

65. For retrognathic cases, is there anything different from the standard protocol that should be done? Do you have any tips for these cases?

It will be like every other class II corrector. If the patient is growing, you will capture any additional relative mandibular growth. If the patient is non-growing, it is dentoalveolar with about a millimeter of mandibular repositioning.

The big difference between *MOTION 3D* and other correctors is the occlusal plane change which appears to help with the stability of the correction.

66. I am concerned that *MOTION 3D* Class II is going to cause eruption of the upper 7s as the posterior segment distalizes. I have a friend that binds a SS archwire on the occlusal of the upper 6-7 to combat this. What are your thoughts? Also, will canting of the arch occur due to the root of the canine tipping forward as the posterior segment distalizes?

The upper 7s don't extrude because there is occlusion with the lower *Essix*. The extrusion of the canine is critical to the occlusal plane change that is a huge part of the stability of the correction. The upper posterior segment is not really distalizing as much as you think it is. Most of the change is based on the occlusal plane change and repositioning of the mandible.

67. When we have severely buccally displaced U3s I am reluctant to bond *MOTION 3D* Class II U3-U6 due to concerns over taking the canines out of bone. As a result we usually bond *MOTION 3D* U4-U6, but the shorty's have a shorter pull (even when we wear e's to the L7s) and don't seem to work as well. Do you recommend just bonding U3-U6 on these displaced canine cases or do you ever bond U4-U7?

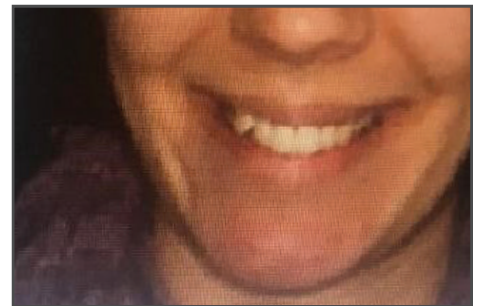
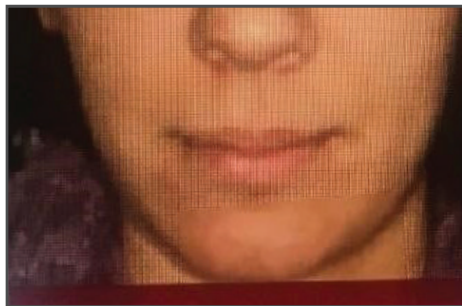
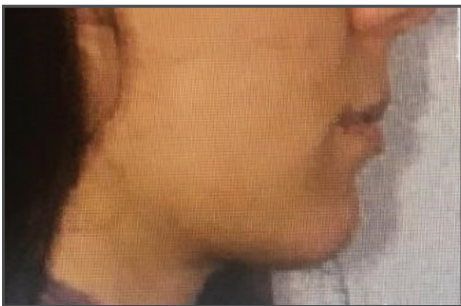
It is recommended to bond 4-6. That is how the design works best rather than 4-7 upper or lower. When the canine is blocked out like that, start with a shorty 4-6 and then switch to 3-6 when it drifts in, if needed. Many times the sagittal correction is sufficient with 4-6 to move onto the next phase of treatment.

MOTION 3D

Class II Treatment (Continued)

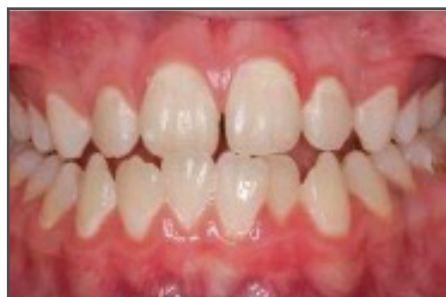
68. Will the *MOTION 3D* Class II Appliance work in this case? The UR6 is in crossbite and has a stainless steel crown on it, so I'm not sure if the appliance will bond well to the crown. I was thinking U4s-U6s followed by clear aligners, but maybe attaching it to the UR7 would make more sense?

In this case, it is recommended to place 4-7 on the upper right and 4-6 on the left, elastics full time on the right, night only on the left.



69. How would you treat this case? The patient hits edge to edge on his incisors and then slides his jaw forward a little bit too close. His upper canines are almost completely blocked out. He's a half step Class II on his fours, fives, and sixes. I was thinking of how I could treat this with the *MOTION 3D* Appliance. If I start with a *MOTION 3D* Class II Appliance to try and distalize the buccal segments, that could make him more Class III and have more of an underbite. And if I start him with a *MOTION 3D* Class III Appliance to correct his underbite, that will make his buccal segments more Class II. What are your thoughts on this case?

Great opportunity to help him out. He is Class III skeletal to me, but canines are ready to erupt so I would use the *MOTION 3D* Class II Appliance first to make room, then a *MOTION 3D* Class III to correct the Sagittal. Likely use an *Essix* during both to maintain the incisors position.



MOTION 3D

Class II Treatment (Continued)

70. Would it be recommended to bond a patient who does not have the canines fully erupted with a *MOTION 3D* Class II Appliance 4-6 or 3-6?

Place the *MOTION 3D* Appliance on the 4-6 as this will allow the 3s to erupt normally.

71. If you have a 4 that isn't fully erupted will running a *MOTION 3D* Appliance 3-6 cause any issues to that 4?

No, it actually will help because as the first molar rotates distally you actually gain space between the canine and first molar which allows the 4 to erupt more easily.

72. I have a 16-year-old patient who is half-step Class II molar bilaterally. UL3 has been in the same position for approximately 10 months. Evidently, it doesn't have sufficient space to erupt (as seen on OPG). The patient is going to be treated with clear aligners. What would HSO recommend?

Start treating the AP first with the *MOTION 3D* Appliance and with a clear aligner on the lower arch. To help the UL3 gain space to erupt, place the *MOTION 3D* from U4-U6 ("Shorty" length) on both sides so it is symmetrical. On the left side, it will create some space for the cuspid to drop.

73. I have a patient that is a Class II and wants to wear clear aligners. The patient's curve of spee needs to be leveled, and lower premolars need to extrude. If I jump into clear aligners U/L, I can start intruding U5s to create space to extrude L5s and open the bite. What would HSO recommend?

It is best to start with the *MOTION 3D* Appliance. As the appliance rotates the first molars, space will open mesially to the molars and will cause the second premolars to align spontaneously. Remember with aligners, always overcorrect the sagittal dimension prior to removal of the *MOTION 3D* Appliance. You can still start lower aligner treatment at the same time.

74. I have used an upper and lower expansion *Herbst* appliance extensively in correction of Class II dental and skeletal cases in growing patients, but I would like to try the *MOTION 3D* Appliance. When the lower anteriors are crowded, and you do not want to flare them, do you expand the upper jaw and lower arch after *MOTION 3D* Class II treatment or do you use the *MOTION 3D* Class III Appliance first to unravel the lower anterior crowding?

There are two equally acceptable approaches. One would be to overcorrect the Class II to Class III; then use the *MOTION 3D* Class III Appliance to reduce the anterior crowding prior to fixed appliances or aligners. Dr. Paquette's preference is always to treat the asymmetric or unpredictable arch first, so with mesially inclined lower canines and anterior crowding, he will place the *MOTION 3D* Class III first to assure he has enough room to align the teeth properly, then switch to the *MOTION 3D* Class II to correct the resultant sagittal issue. The transverse is corrected after the sagittal is set.

75. After removing the *MOTION 3D* Appliance, are there any special instructions to consider with brackets? Should I still tie 6 to 6 or 7 to 7?

Be sure to correct to a super Class I. The more you overcorrect, the less elastics you will need at the end of treatment. After using *MOTION 3D*, once the braces are placed, power chains should not be used over the first molars as the molars are already in their perfect position. You should tie the power chain to the 5s, from 5 to 5.



Class III Appliance

76. Which types of cases can the *MOTION 3D* Class III Appliance be used for?

- Class I, Crowding
- Class III, Deep Bite
- Class III, Open Bite
- Class III, Unilateral
- Class III, Cleft Palate
- Class III, mixed dentition
- As an alternative to surgery

77. Does the *MOTION 3D* Class III Appliance contain nickel?

Yes, the *MOTION 3D* Class III Appliance contains 2-5% nickel, similar to other stainless steel orthodontic appliances.

78. Can I modify the *MOTION 3D* Class III Appliance?

It is not recommended to modify the *MOTION 3D* Class III Appliance. There is a spring that is built into the posterior end of the appliance that allows it to twist to bond to a tipped in molar.

79. What is the average treatment time for Phase 1 patients?

It is recommended to overcorrect with Phase 1 patients to ½ cusp of the canine because the occlusal anatomy is not stable or consistent; it is not designed to occlude with the molars.

Class III Correction: 4-5 months - overcorrect ½ cusp into Class II, maintain with light elastics at night for as long as it took to correct the Class III.

80. Does the *MOTION 3D* Class III Appliance have the same effect as a Face Mask, moving the upper jaw FORWARD?

It depends on how the *MOTION 3D* Class III Appliance is used. With an *Essix* retainer there is less movement of the upper dentition. With braces there will be more. A common misunderstanding is that the face mask causes skeletal changes when the literature would suggest it is primarily dentoalveolar, which is the same movement we see with the *MOTION 3D* Class III with braces.

81. What type of anchorage should I use with the *MOTION 3D* Class III Appliance? I have seen some cases where fixed braces were used, while other cases had an *Essix*.

If you want to maintain the position of the upper incisors, use an *Essix*. If you want anterior movement of the upper incisors, use braces. Be sure to only use Force 1 Elastics.

82. Why is it recommended to use only Force 1 elastics with the *MOTION 3D* Class III Appliance? I prefer to use Force 2 elastics.

There are two main reasons why it is recommended to only use Force 1 elastics with the *MOTION 3D* Class III Appliance. Joint issues could be of concern if using Force 2 elastics with Class III. Also, the roots on lower canines are smaller than the roots of the upper canines.

83. I see some canine extrusion in both Class II and Class III cases using the *MOTION 3D*. I don't feel it is a big issue with Class II patients, but with Class III patients, the extrusion and mobility can get a little scary. What would HSO recommend?

The best approach is to start with a regular length *MOTION 3D* Class III Appliance and bond to the cuspid. If you experience too much extrusion, or if the canine is getting loose, you can replace the appliance with a "Shorty" length *MOTION 3D* Appliance. Place it between the 1st molar and the 1st bicuspid. It is good to treat to a Class II and plan to finish with aligners, where you do not want to experience too much extrusion of the canine.

84. How can I avoid over eruption/extrusion of the cuspid using the *MOTION 3D* Class III Appliance?

Begin with a long *MOTION 3D* Appliance from 3-6 and correct for two months or until you want the cuspid to stop from extruding. Then, remove the *MOTION 3D* Appliance and place a "Shorty" from the 4-6 for the remainder of the treatment.

85. Can I use a palatal expander before using the *MOTION 3D* Class III Appliance?

Class III, mixed dentition – You can combine the sagittal and transverse correction at the same time, using a *MOTION 3D* Class III Appliance and a palatal expander simultaneously.

Class III, adult patients - Follow the *SAGITTAL FIRST™* Philosophy and place the *MOTION 3D* Class III Appliance first. Address the transverse dimension once the patient is in a Class I occlusion.

MOTION 3D

Class III Appliance (Continued)



86. I just ordered the *MOTION 3D* Class III Appliance, and I'm going to place it next week. Do I use it like I would use a Class II appliance, where I place an *Essix* retainer on the upper arch and the *MOTION 3D* on the lower arch, or do I place upper brackets at the same time that I place the *MOTION 3D* Class III on the lower arch?

If you want to maintain an upper incisor position, then use the *Essix*. If you want to allow/promote anterior movement of the upper incisors, then use brackets. Also, remember with the *MOTION 3D* Class III Appliance, you bond the canine first, then press the molar pad to place it while the adhesive is light cured, to activate the built-in twist/spring that maintains the canine in the trough.

87. I would like to place a *MOTION 3D* Class III Appliance on a patient who has his lower canines at a very odd angle, which might make it hard to bond the appliance to it. What would HSO recommend?

You should bond L4-L6, using a Shorty, then once the canine has room and uprights, you should switch to L3-L6.

88. Are there any doctors using the *MOTION 3D* Class III from the L4-L7 when the L3s are severely rotated and displaced??

Yes, although the recommendation would be from L4-L6 unless dental anatomy makes this not advisable.

89. Can a unilateral Class III case be treated with a *MOTION 3D* Class III Appliance?

Absolutely! Bond the *MOTION 3D* bilaterally. Use full-time elastics on the Class III side and elastics on the Class I side at night only.

90. I have a patient I want to try the *MOTION 3D* Class III Appliance on. However, he previously had lower premolars removed, so the distance from mid-buccal on the lower 6 to the canine is only 17 mm. However, from the 3-7 is 29 mm. Does the patient need a small one from 3-6 (side where the premolar was extracted) and another one from 3-7 (29 mm)?

It will be easier to place the *MOTION 3D* Appliance from L3-L6.

91. Regarding the Class III case in Dr. Carrière's article in the JCO April 2016 issue, does Dr. Carrière have to make the composite bite ramps? Or does he purchase these?

The bite ramps are not purchased. The blue bite pads are placed by hand as are the tooth colored turbos. He uses pink triad, and shapes them with a handpick. It is a very simple step.

**See the image on the following page for reference.*

92. I am working with a Class III case that measures 19 mm. However, HSO does not offer a *MOTION 3D* Class III Appliance in 19 mm. Should I use a shorter one or a longer one?

Either a shorter or longer one will work. Obviously, you don't want to have it hanging off the distal of the molar. Bond the canine first and fill the gap on the molar with ample adhesive. Remember to press the molar pad to the facial surface of the molar.

93. When correcting a Class III case, are there any scenarios when you would recommend bonding to the lower 7 (L3-L7, or L4-L7)?

Yes, in the situation of a Class III open bite, bonding 3-7 or 4-7 will intrude the lower 7 and help close the open bite. It is also recommended to bond to the lower 7s if the lower 6s are not present.

*Question 91
reference



Fig. 4 Case 1. Class I platform achieved after three and a half months of *MOTION 3D* treatment.



Fig. 5 Case 1. Six weeks later, upper .019" x .025" *Cu Nitanium* (35°C) archwire and lower .014" x .025" *Cu™ Nitanium®* (27°C) archwire placed to complete leveling and start torque control.

94. In a Class III high angle, as the occlusal plane (OP) rotates counterclockwise, will the mandible posture moving forward make the Class III worse?

That is not what we have experienced nor what the research has indicated thus far. In a Class III, the changes are primarily dentoalveolar. We place brackets on the upper if we want the upper incisors to come forward or an *Essix* if we want to minimize upper tooth movement.

95. I have a Class III case whose treatment plan is as follows: RPE on the upper arch with *MOTION 3D* Class III on the lower arch, followed by fixed appliances on the upper and lower arches. Do you recommend using the RPE with *MOTION 3D* Class III when needing expansion in the upper arch?

That is an option. However, we would recommend placing fixed appliances on the upper to make room for the canines, using a reverse pre-torque wire and start *MOTION 3D* Class III on the lower arch.

96. Does the *MOTION 3D* Class III Appliance cause the lower 3s to be displaced buccally?

No, because the *MOTION 3D* Class III appliance's arm has a "twist" from the molar to the canine that is built in. Bond the canine first, and then bond the molar while pressing the molar pad against the facial surface of the tooth. This is why we instruct doctors not to try to adapt the appliance to the teeth first.

MOTION 3D

Class III Appliance (Continued)

97. I have a Class III adult male patient. He is edge to edge in centric relation and postures into anterior cross bite. Will this work out with the *MOTION 3D* Class III Appliance and aligners? Or would braces be preferred? If we do aligners, how do we keep him from posturing forward?

Use the *MOTION 3D* Class III Appliance with an upper holding aligner, overcorrect as much as the original malocclusion in centric relation.

So start with Class III *MOTION 3D* and an upper passive aligner until he's over-corrected?

Yes. That will maintain upper incisors position.

Do we need to do anything special about the functional shift? Or will that work itself out with the *MOTION 3D*?

Generally it works out because of the *Essix*. Sometimes you can bond inclined lingual bite pads on the incisors and flat plane on first molars to tripod the occlusion until it skips over.



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The *Henry Schein Orthodontics YouTube Channel* has many informative videos on the *MOTION 3D* Appliance. Check them out here!

- Bonding: *MOTION 3D* Class II Metal - <http://bit.ly/BondMetal>
- Bonding: *MOTION 3D* Class II CLEAR - <http://bit.ly/BondClear>
- Bonding: *MOTION 3D* Class III - <http://bit.ly/BondIII>
- Debonding: *MOTION 3D* Class II (Dr. Carriere) - <http://bit.ly/Debond>
- Debonding: *MOTION 3D* Class II (D. Paquette) - <http://bit.ly/Debond2>
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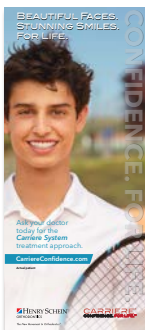
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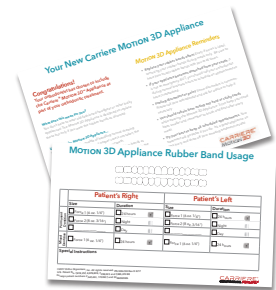
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U.S. Patent No. 7,618,257, 6,976,839, 7,238,022, and 7,621,743 and foreign patents.
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