

CCO System

# Workbook



Experts in Orthodontics  
GC Orthodontics Europe GmbH  
[www.gc.dental/ortho](http://www.gc.dental/ortho)

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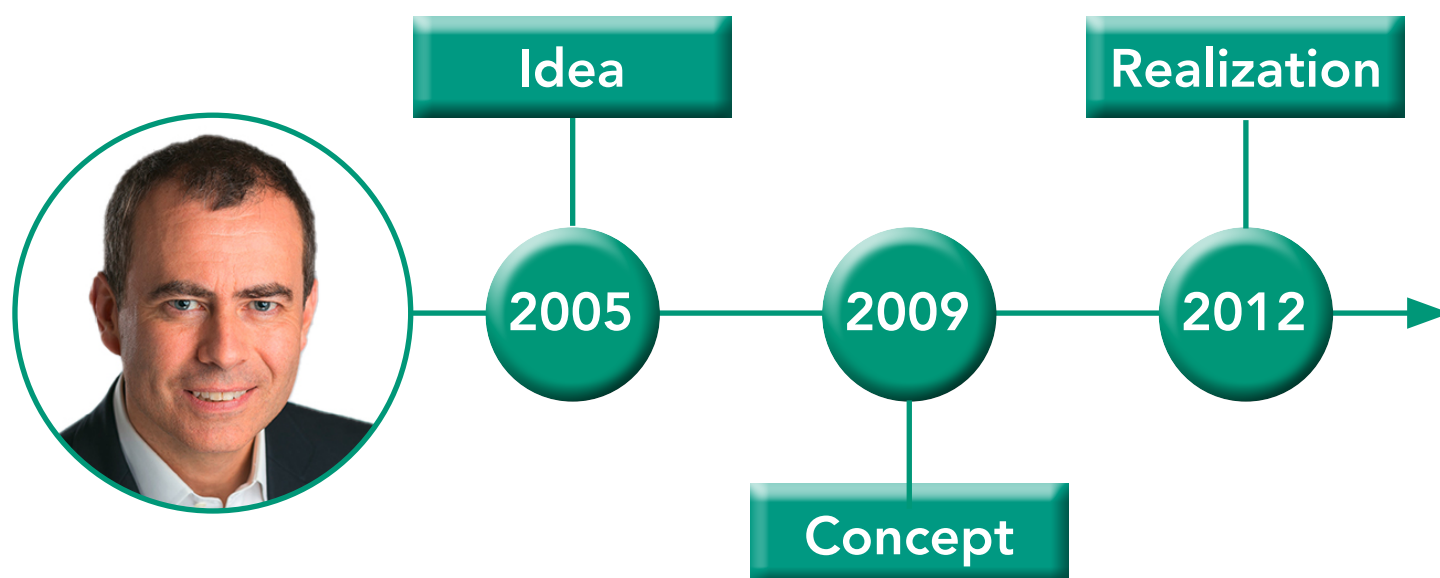
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Modern orthodontic treatment with fixed appliances must allow clinicians to achieve the best possible results with consistency and in a time efficient fashion. The CCO System® integrates the latest technological advances in bracket design and archwire metallurgy to facilitate a truly innovated and effective treatment delivery. CCO is the one and only solution specifically designed for the use of interactive self-ligating brackets and merges fundamental principles of function and aesthetics with the technology of today.

Dr. Antonino Secchi



### ANTONINO G. SECCHI, DMD, MS

Dr. Secchi maintains a private practice in Devon, PA. He is a Diplomate of the American Board of Orthodontics and member of the Edward H. Angle Society of Orthodontists.

Dr. Secchi received his DMD, Certificate in Orthodontics, and a Master of Science in Oral Biology from the University of Pennsylvania, same institution where he taught for over 10 years holding the position of Clinical Assistant Professor and Clinical Director of the Department of Orthodontics.

Dr. Secchi has published in various dental and orthodontic peer review journals in the areas of treatment mechanics and the straight wire appliance. He wrote the chapter "Contemporary Mechanics Using The Straight Wire Appliance" for the last three editions of the Graber/Vanarsdall/Vig orthodontic textbook.

Dr. Secchi received the 2005 David C. Hamilton Orthodontic Research Award from the Pennsylvania Association of Orthodontists (PAO), the 2010 and 2013 Outstanding Teacher Award from the Department of Orthodontics of the University of Pennsylvania.

Dr. Secchi is the founder of the "Complete Clinical Orthodontics System" (CCO System) and the Secchi Institute™, which provides continuing education for orthodontists in the USA as well as throughout the world.

Dr. Secchi loves to spend time with his wife and 5 children. He is a passionate photographer and likes people, traveling and sports.

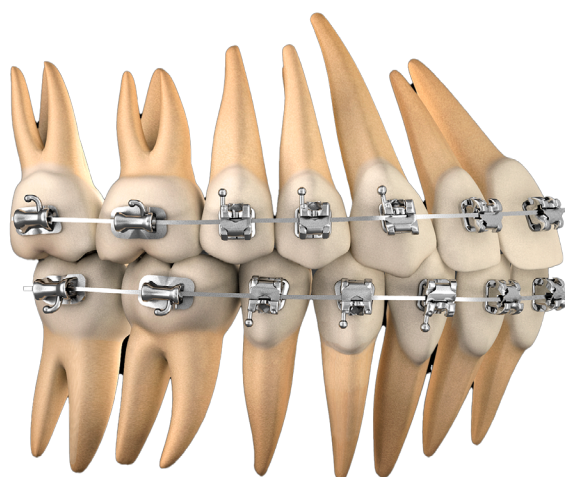
## CCO® System – Fundamentals

Self-Ligating brackets, both passive and inter-active, have been available on the orthodontic market for decades. However, many of the most common prescriptions and mechanics used are based on traditional twin bracket systems.

The goal of the CCO System is to capitalize on the wealth of our knowledge and to incorporate new technologies and proven concepts that drive a higher level of clinical excellence and efficiencies across all patient treatment plans.

The CCO system was designed to take advantage of the clinical interaction and relation of inter-active SL brackets with superelástico arch wires. By introducing slight variations in torque, angulation, and tip the CCO System optimizes tooth movement, eliminating the need for many auxiliaries and additional mechanics.

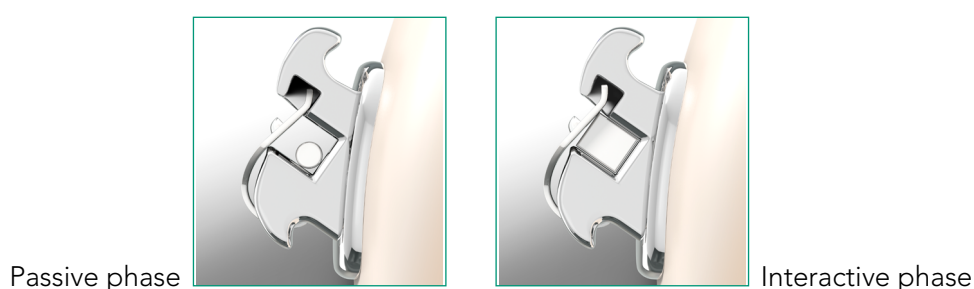
The CCO System emphasizes goal-directed treatment that ends in a pre-visualized result with consistency and efficiency.



## The CCO Bracket

The CCO System integrates classic mechanics with modern, straight-wire inter-active self-ligation. The key functional distinction with interactive SL brackets is that of the optimal torque expressed with a seated archwire. The CCO bracket eliminates ligation drag while optimizing rotational control, in-out and torque control in square and rectangular wires.

With the CCO system, torque expression starts as early as the second wire and optimal torque expression is always reached by end of the treatment.



## Poor torque expression

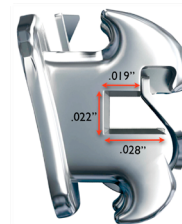
## Optimal torque expression

Wire dimension	Torque expressed
.017 "x.025"	0°
.018 "x.025"	0°
.019 "x.025"	5°
.021 "x.025"	14°

Wire dimension	Torque expressed
.017 "x.025"	17°
.018 "x.025"	19°
.019 "x.025"	22°
.021 "x.025"	22°

Passive SL Systems

Experience



Experience Interactive SL Brackets CCO express 100% of designed torque of the bracket.

Optimal torque with the correct Torque values designed in each given bracket will ensure desired results. When properly positioned on the FA point – the brackets delivers the desired information correctly, consistently and efficiently.

Optimal torque with seated archwire on a L4 bracket with 22° torque

Celestino article: Rivero, M., Nobrega, C., et al, Comparative Study of Torque Movement Induced by Self-Ligation and Conventional Systems. Orthodontic Science and Practice, 2012; 5(17):37-46.

## The CCO bracket

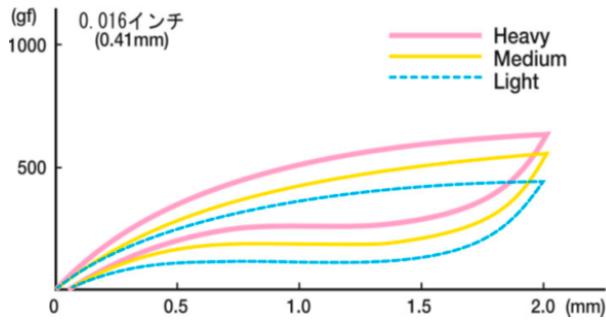
EXPERIENCE® M and C - by GC Orthodontics and Tomy



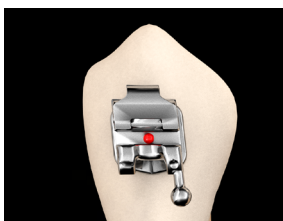
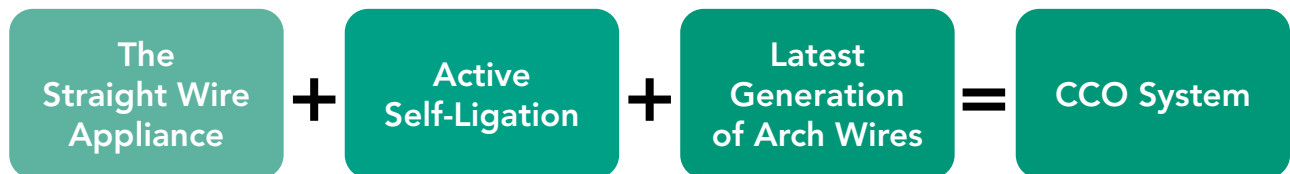
Bracket design is important, but actual bracket construction is crucial! The Experience line of CCO brackets is made exclusively by Tomy, a Japanese manufacturer with over 80 years experience. Tomy is a world industry leader in producing orthodontic products of the highest quality. A simple look at the Experience bracket and one can appreciate:

- CNC smooth and polished bracket slots & surfaces to assure accuracy, reduced friction and better patient comfort and hygiene
- Anatomically designed bases with excellent mechanical properties – for perfect tooth adaptation and bonding
- Full Clip Slot coverage for correct rotational control
- Chamfered slot edges to eliminate wire notching and binding

## Technologically advanced Archwires



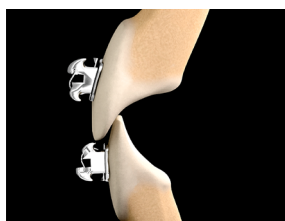
## Highlights of the CCO System



**Rotational Control** – Due to the spring effect and the mesial/distal width of the interactive clip rotations are easier to correct and control. There is no need to have overcorrected rotation values to compensate for play between bracket and wire: CCO with an interactive clip guarantees full engagement of all archwires: once the clip is closed the rotation designed in the bracket will be fully expressed.



**Full Torque Expression** – The uniqueness of a fully engaged archwire early on in treatment eliminates the need for overcorrections in torque designed into earlier prescriptions. **The fundamental principle of the CCO System lies in the full engagement of the archwires.** Full engagement means reaching optimal torque expression as with the .020" x .020" dimension of BioActive arch wire.



**Incisor Control** – Optimal torque is needed in the anterior to achieve proper esthetics and function. The CCO Rx combines proven torque values that will be optimally expressed as of the second archwire, assuring the optimal tooth position at the end of treatment.

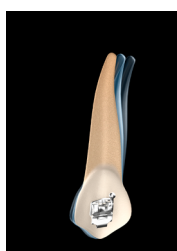


**Molar Control** – All molar tubes are passive. The CCO system Rx has introduced specific overcorrections for the first and second molars to achieve proper torque control.

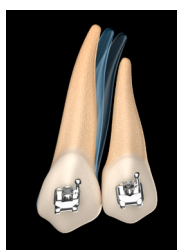
## Advancements in the CCO Experience™ Bracket System:



**U1/2:** 12°/10° Torque - There is no longer any need to augment the incisor torque to achieve the desired end result. The CCO system depends on fully engaged archwires and interactive clips - no information is lost because of play between bracket and wire.



**U3:** 10° Tip - has been chosen as the best global solution to avoid the commonly seen collision of the canine roots against the premolars.



**U4/U5:** The CCO Rx makes these brackets as interchangeable to simplify and reduce inventory.



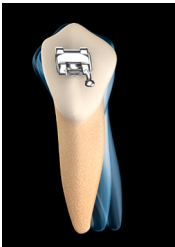
**U6/7:** -14°/-20° Torque - CCO introduces higher torque value on the second molar for better arch coordination.



**L1/2:** -6° Torque – the Rx provides small amount of lingual Crown torque to keep the incisor in their upright position during the levelling of the occlusal plane.



**L3:** -8° Torque – the RX reduces the amount of negative torque that most systems have so that the fully expressed torque assures a better upper and lower cuspid coupling.



**L4/L5:** 2°/-1° Tip – This small change in tip assists in reaching an upright position in all cases, extraction and non-extraction. .



**L6/L7:** -25°/-20° Torque – These values help prevent the L6/L7 from rolling in during treatment

## The end Result: The CCO System Rx

### Maxillary

Tooth	Torque	Ang.	Rotation
U1	12	5	0
U1 Low Torque	7	5	0
U2	10	9	0
U2 Low Torque	3	9	0
U3 Hook	-7	10	2M
U3 Low Torque Hook	0	10	2M
U4/5	-9	0	0
U4/5 Hook	-9	0	0
U6 Hook	-14	0	10D
U7 Hook	-20	0	10D

### Mandibular

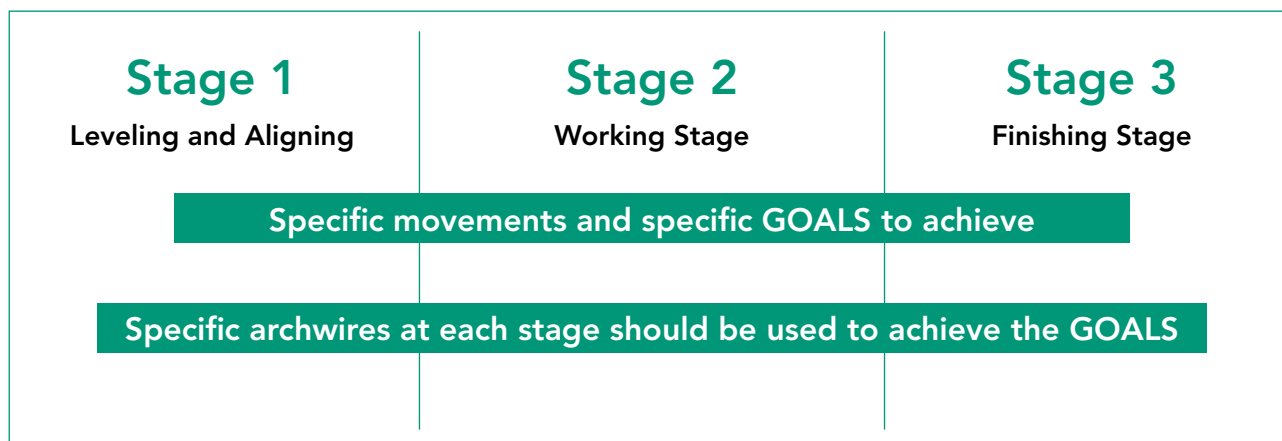
Tooth	Torque	Ang.	Rotation
L1/2	-6	0	0
L1/2 High Torque	-1	0	0
L3 Hook*	-8	3	0
L4	-12	2	0
L4 Hook*	-12	2	0
L5	-17	-1	0
L5 Hook*	-17	-1	0
L6 Hook*	-25	-1	0
L7 Hook*	-20	-1	0



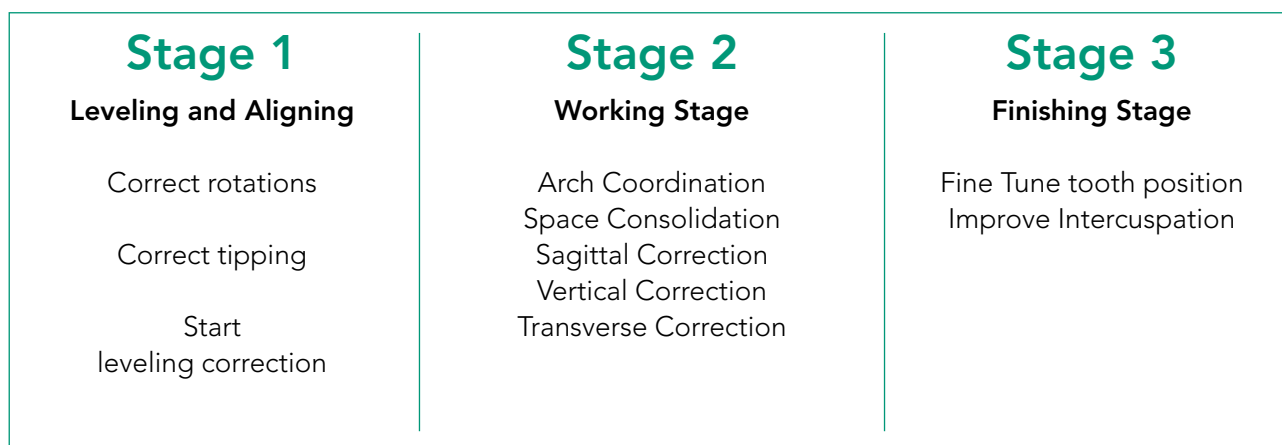


The CCO System has simple and clearly defined treatment mechanics. These protocols are the key to efficiency, consistency and profitability both in time and money.

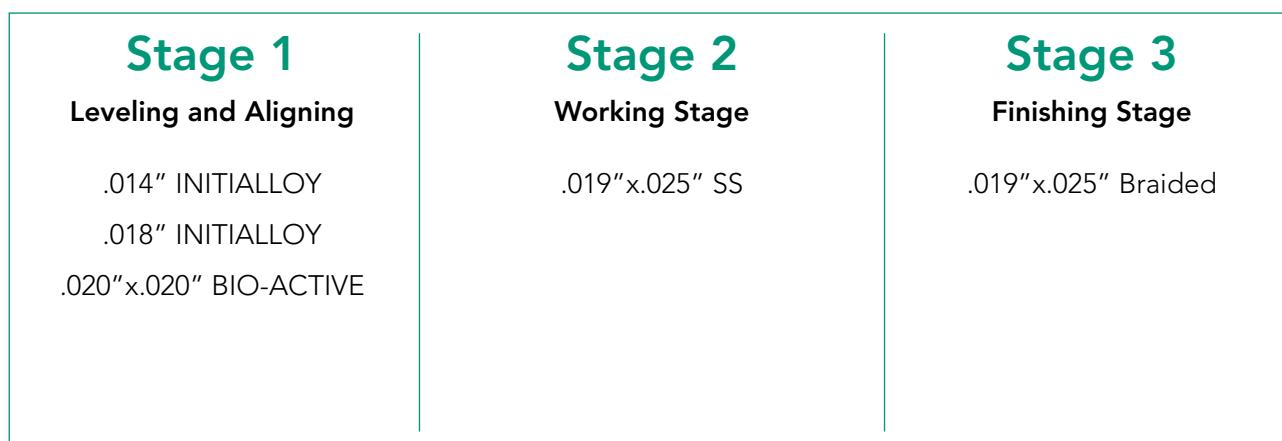
### Stages of Treatment mechanics



### Stages of Treatment mechanics



### Stages of Treatment mechanics



NOTE: if the arch has not completely levelled after using the .020"x.020" BIO-ACTIVE (can occur especially in the second molars) using an intermediary .019"x.025" BIO-ACTIVE is recommended before moving on to Stage 2.

# Wire Sequencing

## Stage 1: Leveling and Aligning

.022 Slot	Time	Goals
.014" INITIALLOY	8-12 weeks	Complete leveling and aligning
.018" INITIALLOY	8-12 weeks	Correct all rotations
.020"x.020" BIO-ACTIVE	8-10 weeks	Maintain or upright incisors Upright pre-molars and molars

\* In cases of minor to moderate crowding you can skip the .018" INITIALLOY wire.

## Stage 2: Working Stage (Non-extraction)

.022 Slot	Time	Goals
.019 x .025 BIO-ACTIVE*	6-8 weeks	OJ/OB correction
.019"x.025" ss	3-4 weeks	Class II or III correction Close all remaining spaces Up right Finish leveling the occlusal plane Arch coordination

\* In cases where the .020" x .020" BIO-ACTIVE does not level and align the second molars enough to allow the placement of the .019"x.025" ss, the use of the .019"x.025" BIO-ACTIVE will correct this problem, so the stainless steel working wire can be used.

## Stage 2: Working Stage (Extraction)

.022 Slot	Anchorage	Goals
.019"x.025" ss with hooks INITIALLOY coils 150 gr	Medium	Close spaces by moving anterior teeth backward approximately the same amount as moving the posterior teeth forward.
.019"x.025" ss with hooks INITIALLOY coils 150-200 gr	Maximum	Close spaces by moving anterior teeth backward minimizing the movement of posterior teeth forward.
.020"x.025" ss with hooks INITIALLOY coils 150-200 gr	Minimum	Close spaces by moving posterior teeth forward minimizing the movement of anterior teeth backward.

### Use of inter-maxillary elastics at the Working Stage

Within the Working Stage for Non-Extraction as well as for Extraction cases we use short 3/16" 4 or 6 oz. in a Class II, III or triangular vertical fashion as indicated by the specific clinical situation.

## Stage 3: Working Stage

.022 Slot	Anchorage	Goals
.019"x.025" Braided	4-6 weeks	Detail occlusion to achieve optimal intercuspation.

### Use of inter-maxillary elastics at the Finishing Stage

Within the Finishing Stage we use short 3/16" 6 or 8 oz. in a Class II, III or triangular vertical fashion as indicated by the specific clinical situation.

## Case presentation

### Case 1, Dr Antonino Secchi (USA)

Male, 12 years old.

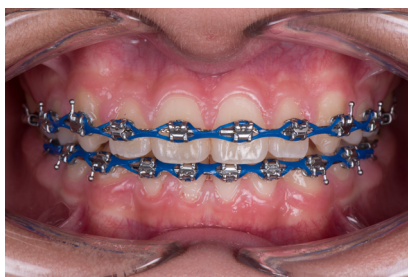
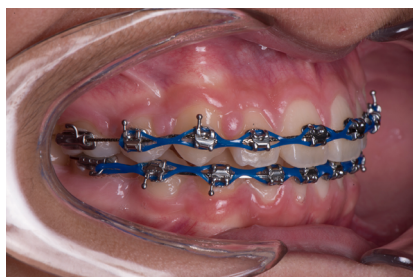
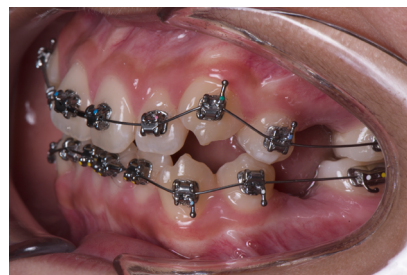
Class I, moderate to severe crowding with upper and lower canines ectopically erupting.

Treatment was done with fixed self-ligating appliances CCO System from GC Orthodontics. Extraction of upper and lower 2nd premolars were done in order to have enough space to level and align upper and lower arches. Once the alignment was completed, minimum anchorage was used to close all remaining spaces. Spaces were actively closed in the working stage on a .019x.025 SS, after the occlusal plane was completely leveled.

#### Sequence:

Leveling and aligning Stage: .014" INITIALLOY and then .020"x.020" BIO-ACTIVE wires. Working Stage: .019"x.025" SS coordinated wires. Final Stage: .019"x.025" SS braided wires.

**Treatment time:** 13 months.



**Case 2, Dr Antonino Secchi**  
**Male, 25 years and 11 months old.**

Class III, anterior cross bite, arches not coordinated, and spaces in lower arch.

Treatment was done with fixed self-ligating appliances CCO System from GC Orthodontics. Upper and lower arch were leveled, lower spaces closed, arches were coordinated, Class III elastics ( 4oz, from lower 3 to upper 5) were used, and occlusal plane was leveled and proper anterior torque was expressed on a .019"x.025" SS wire.

**Sequence:**

Leveling and aligning Stage: .014" INITIALLOY, and then .020"x.020" BIO-ACTIVE wires. Working Stage: .019"x.025" SS coordinated wires. Final Stage: .019"x.025" SS braided wires

**Treatment time:** 14 months.



### Case 3, Dr Oliver Liebl (Germany)

Female, 14 years and 5 months old.

Class II division 2, light crowding, proclination of lower anteriors. Retention tooth 15 and agenesis tooth 25. The Class II relationship was treated with a modified Twinblock (acc. to Jonathan Sandler). After adjusting the bite position with the functional appliance active self-ligating Brackets (CCO System from GCOrthodontics) were bonded indirectly. Surgical Extraction of tooth 15 and extraction of deciduous tooth 65 took place after bonding of the Brackets. Leveling and aligning was achieved with INITIALLOY (.014" and .018") and BIO-ACTIVE wires (.020" x .020"). Arch coordination, space consolidation and leveling of the occlusal plane were done with on a .019" x .025" SS wire. Spaceclosure in the maxilla with a .021" x .025" SS with minimum anchorage (INITIALLOY coilsprings medium).

**Sequence:**

Leveling and aligning Stage: .014" INITIALLOY, .018" INITIALLOY and then .020" x .020" BIO-ACTIVE wires.

Working Stage: .019" x .025" SS coordinated wires.

Spaceclosure (minimum anchorage): .021" x .025" SS, INITIALLOY coilsprings medium

Final Stage: 0.019" x .025" SS braided wires

**Treatment time:** 11 months of functional treatment with Twinblock, 16 months with fixed appliances.



**Case 4, Dr Oliver Liebl (Germany)**  
**male, 13 years and 5 months old.**

Class III – dental & skeletal class III, light-moderate crowding in lower jaw, Boltondiscrepancy for lower anteriors, proclination of upper anteriors – retroinclination lower anteriors. The Class III relationship was treated with a functional appliance – “Rückschubdoppelplatte” (acc. to Pr. Sander). After adjusting the bite position with the functional appliance active self-ligating Brackets (CCO System from GCOrthodontics) were bonded indirectly.

Leveling and aligning was achieved with INITIALLOY (.014” and .018”) and BIO-ACTIVE wires (.020”x .020”). Arch coordination, space consolidation and leveling of the occlusal plane were done with on a .019”x.025” SS wire. IPR in the anterior segment (33-43) has been performed with the Dentasonic IPR Kit.

No Finishing with the fixed appliance, but with in house Finishing Aligners

**Sequence:**

Leveling and aligning Stage: .014” INITIALLOY, .018” INITIALLOY and then .020” x .020” BIO-ACTIVE wires.  
Working Stage: 0.019”x0.025” SS coordinated wires.

Final Stage: in House Finishing Aligner Build up of hypoplastic teeth 12 & 22 with injection moulding technique – GC gaenial flow.

**Treatment time:** 9 months of functional treatment with RSDP, 10 months with fixed appliances, 2 months Finishing Aligner



### Case 5, Dr Julia Garcia (Spain)

Female, 23 years old.

Skeletal Class III, Vertical Maxillary Excess (gingival smile), Open bite.

Treatment was done with fixed self-ligating appliances CCO System from GC Orthodontics. Treatment: Orthodontics and Orthognatic Surgery. Leveling the occlusal planes and decompensating both arches was done to prepare the patient for orthognatic surgery. Once decompensated and with working wires .019"x.025" SS, surgery was done. Broided 0'019x .025" SS wires were placed to finalize the case in the right position.

#### Sequence:

Leveling and aligning Stage: .014" INITIALLOY and then .020"x.020" BIO-ACTIVE wires. Working Stage: .019"x.025" SS coordinated wires. Final Stage: .019"x.025" SS braided wires.

**Treatment time:** 16 months.



**Case 6, Dr Julia Garcia (Spain)**

**Female, 36 years old.**

Skeletal Class III, Underbite.

Treatment was done with fixed self-ligating appliances CCO System from GC Orthodontics. Treatment: Orthodontics and lower extractions of first lower right and left premolars. We extract the premolars at the beginning of the treatment allowing the CCO prescription to level and align the lower arch using the extraction spaces with an 0.014 wire. To finish the first stage a .020"x.020" wire was used which also help leveling the occlusal plane. Working wires .019"x.025" SS, for space closure with colis an class III elastics (night use onle)and broided .019"x .025" SS wires were placed to finalize the case in the right position.

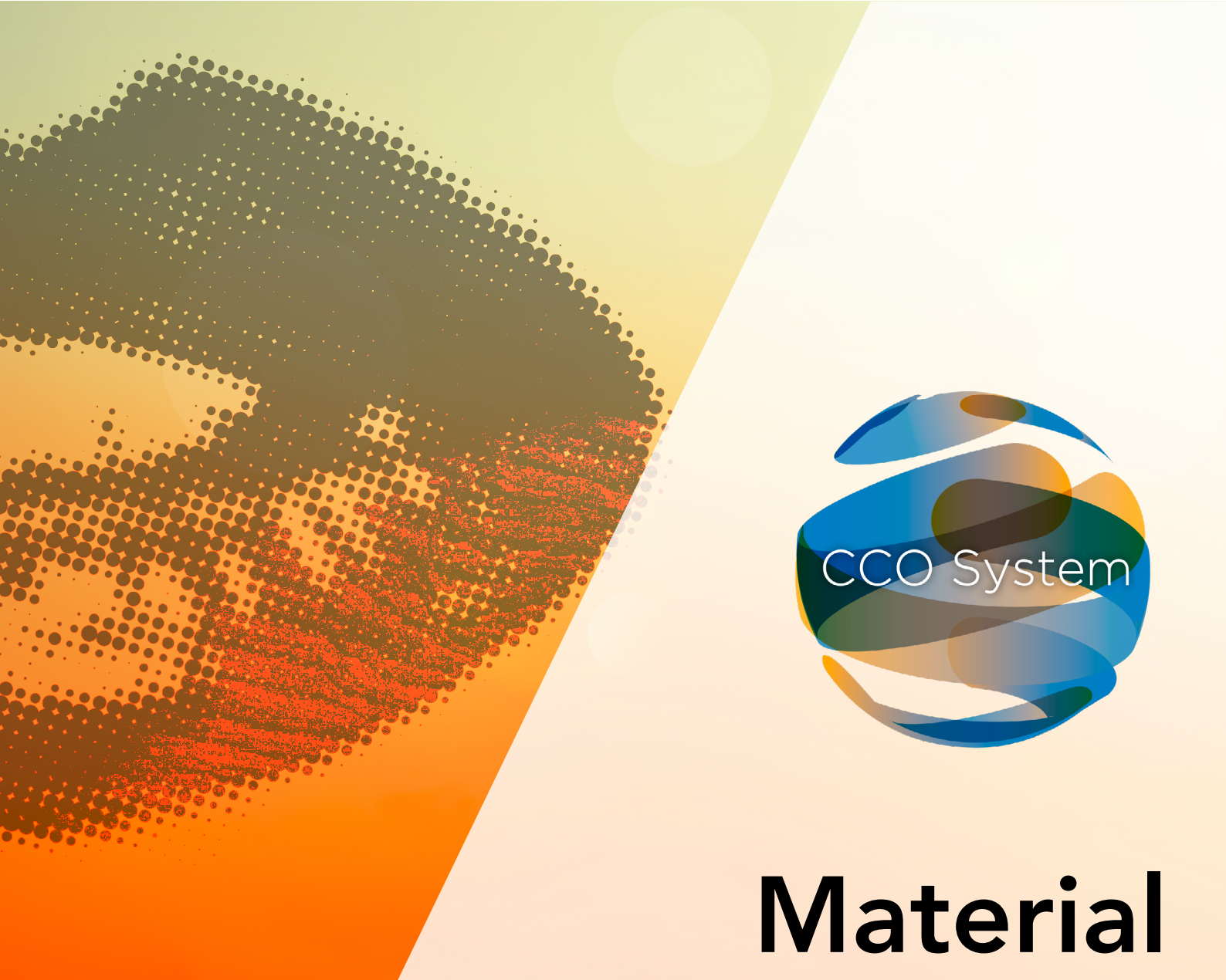
**Sequence:**

Leveling and aligning Stage: 014 Initialloy and then .020"x.020" Bioactive wires. Working Stage: .019"x.025" SS coordinated wires. Final Stage: .019"x.025" SS braided wires.

**Treatment time:** 20 months.







# Material





**EXPERIENCE metal CCO**

Tooth	Torque	Ang.	Rotation	.022"x.028"	
				R	L
Maxillary					
U 1	12°	5°	0°	20-2110-0007	20-2210-0007
U 2	10°	9°	0°	20-2120-0007	20-2220-0007
U 3/Hk	-7°	10°	2m	20-213D-0007	20-223D-0007
U 4/5	-9°	0°	0°	20-2540-0007	20-2540-0007
U 4/5/Hk	-9°	0°	0°	20-214D-0007	20-224D-0007
Mandibular					
L 1/2	-6°	0°	0°	20-2610-0007	20-2610-0007
L 3/Hk	-8°	3°	0°	20-243D-0007	20-233D-0007
L 4	-12°	2°	0°	20-2440-0007	20-2340-0007
L 4/Hk	-12°	2°	0°	20-244D-0007	20-234D-0007
L 5	-17°	-1°	0°	20-2450-0007	20-2350-0007
L 5/Hk	-17°	-1°	0°	20-245D-0007	20-235D-0007


**EXPERIENCE ceramic CCO**

Tooth	Torque	Ang.	.022"x.028"	
			R	L
Maxillary				
U 1	12°	5°	11-2110-0007	11-2210-0007
U 2	10°	9°	11-2120-0007	11-2220-0007
U 3/Hk	-7°	10°	11-213D-0007	11-223D-0007
U 4/5	-9°	0°	11-2540-0007	11-2540-0007
U 4/5/Hk	-9°	0°	11-214D-0007	11-224D-0007
Mandibular				
L 1/2	-6°	0°	11-2610-0007	11-2610-0007
L 3/Hk	-8°	3°	11-243D-0007	11-233D-0007
L 4	-12°	0°	11-2440-0020	11-2340-0020
L 4/Hk	-12°	0°	11-244D-0020	11-234D-0020
L 5	-17°	0°	11-2450-0020	11-2350-0020
L 5/Hk	-17°	0°	11-245D-0020	11-235D-0020

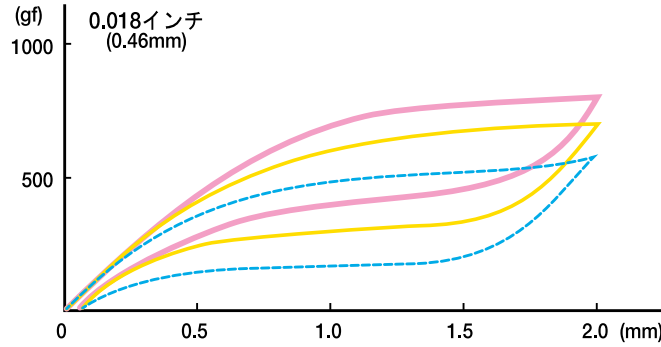
## Bondable Single Tube, LP CCO

Tooth	Torque	Offset	Angulation	L/R	.022"x.028"
Maxillary					
U6	-14°	10°	0°	R	40-2160-0106
				L	40-2260-0106
U7	-20°	10°	0°	R	40-2170-0120
				L	40-2270-0120
U7 (short) CCO 	-20°	10°	0°	R	40-2170-0007
				L	40-2270-0007
Mandibular					
L6 CCO 	-25°	0°	-1°	R	40-2460-0007
				L	40-2360-0007
L7	-20°	0°	0°	R	40-2470-0120
				L	40-2370-0120
L7 (short) CCO 	-20°	0°	-1°	R	40-2470-0007
				L	40-2370-0007



# INITIALLOY Round Archwires

Some archwires are available with a central V-Bend (or "dimple"), indicated by a letter "D" in the P/N.



		A P/N		B P/N	
Force	Dimension	Maxillary	Mandibular	Maxillary	Mandibular
Light	.014"	71-A1U0-0014	71-A1L0-0014	—	—
	.016"	71-A1U0-0016	71-A1L0-0016	—	—
	.018"	71-A1U0-0018	71-A1L0-0018	—	—
Medium	.012"	71-A2U0-0012	71-A2L0-0012	—	—
	.014"	71-A2U0-0014	71-A2L0-0014	71-B2U0-0014	71-B2L0-0014
	.014" "Dimple"	71-A2UD-0014	71-A2LD-0014	71-B2UD-0014	71-B2LD-0014
	.016"	71-A2U0-0016	71-A2L0-0016	71-B2U0-0016	71-B2L0-0016
	.016" "Dimple"	71-A2UD-0016	71-A2LD-0016	—	—
	.018"	71-A2U0-0018	71-A2L0-0018	71-B2U0-0018	71-B2L0-0018
	.018" "Dimple"	71-A2UD-0018	71-A2LD-0018	—	—
.020"	71-A2U0-0020	71-A2L0-0020	—	—	

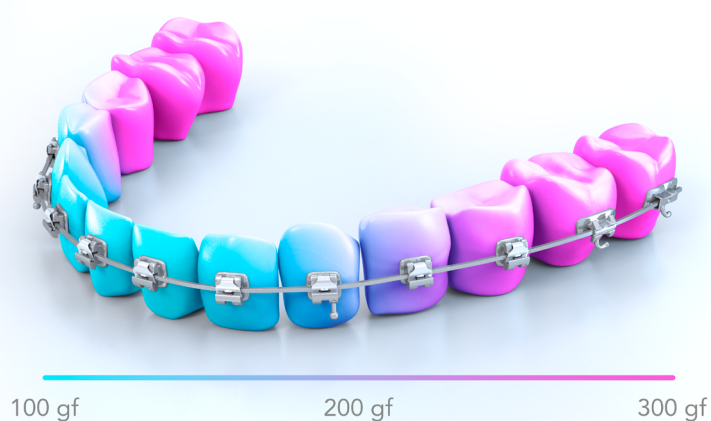
		C P/N	
Force	Section	Maxillary	Mandibular
Light	.014"	71-C1U0-0014	71-C1L0-0014
	.018"	71-C1U0-0018	71-C1L0-0018
Medium	.014"	71-C2U0-0014	71-C2L0-0014
	.014" "Dimple"	71-C2UD-0014	71-C2LD-0014
	.018"	71-C2U0-0018	71-C2L0-0018
	.018" "Dimple"	71-C2UD-0018	71-C2LD-0018

## BIO-ACTIVE Square and Rectangular Archwires

Some archwires are available with a central V-Bend (or "dimple"), indicated by a letter "D" in the P/N.

		A P/N		B P/N	
Dimension		Maxillary	Mandibular	Maxillary	Mandibular
.019"x.025"		70-A0U0-1925	70-A0L0-1925	70-B0U0-1925	70-B0L0-1925
.020"x.020"		70-A0U0-2020	70-A0L0-2020	70-B0U0-2020	70-B0L0-2020
.020"x.020"	"Dimple"	70-A0UD-2020	70-A0LD-2020	—	—

			C P/N	
Dimension			Maxillary	Mandibular
.019"x.025"			70-C0U0-1925	70-C0L0-1925
.020"x.020"			70-C0U0-2020	70-C0L0-2020
.020"x.020"	"Dimple"		70-C0UD-2020	70-C0LD-2020





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Since 1921  
Towards Century of Health

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