

## **XRAY T2'009**

### **It's all in the details.**

XRAY has been viewed as the highest quality touring car available since it entered the RC car scene in 2000. Now with a long and distinguished history of racing achievements and ground-breaking, award-winning innovations, XRAY is proud to now offers the T2'009... the most advanced RC touring car on the market today... a top-quality "no-compromise" engineering marvel designed to put you in the winners circle.

Revolution, evolution, optimization... those are the key terms that describe how the T2 platform came to be over the last few years. XRAY Research & Development along with the Factory Team devoted themselves to extensive testing, all in the effort to bring the consumer the latest evolution of the successful T2 platform.

With the fast paced rule changes in touring car, the main focus of the T2'009 has been to evolve & optimize. To take on what the world can offer and outperform all others under any racing conditions with any rules. Take your pick — asphalt, carpet, rubber or foam tires, NiMh or cutting edge LiPo batteries, high-performance brushed or brushless motors — the T2'009 can handle them all and dominate the competition in the process. No extras needed... just a desire to win.

Pure design. Pure racing. Pure adrenaline.

Dipl. Eng. Juraj Hudy  
Chief Engineer, XRAY

### **2009 news & main features:**

- Based on the ultra successful T2'008 platform, fine tuned for highest competition racing on rubber & foam tires
- LiPo pack ready with the use of unique graphite pads that raise the top deck to fit popular-sized LiPo battery packs
- New super-light Swiss 7075 T6 aluminum rear drive shafts, hard anodized, black coated and laser engraved, 38% lighter than standard drive shafts
- New super-light drive axles with 35% less rotating mass
- Drivetrain featuring 34T/20T pulleys on both EU and US versions
- Limited edition orange coloring on aluminum parts for stylish and distinctive look. Warning, the blazing orange color will not improve lap times.
- Dozens of ultra-fine improvements particularly on tolerances, clearances, and material structures
- Most parts are fully compatible with the T2'008
- Available in two versions to meet specific ROAR, EFRA, and FEMCA regulations:
  - US Foam-spec 6-cell Edition (#30 00014) – ROAR
  - EU Rubber-spec 6-cell Edition (#30 0013) – ROAR, EFRA, FEMCA
- Battery slots on chassis moved slightly outwards for better clearance between batteries and spur gear
- EU Edition available with 6-cell chassis which allows fitting of both 5- and 6-cell battery configurations
- EU Edition features narrow, ultra-thin 2.0mm top deck for higher grip
- Reduced sensitivity to changing track conditions, giving super-consistent performance during runs
- Lowered battery backstops for better fit and clearance between soldering tabs
- Both EU & US Editions come with Swiss 7075 T6 aluminum ball differential

- Centrally-positioned layshaft and split bulkheads provide optimum balance thanks to perfect weight distribution of the motor towards centerline, giving quicker left-right transitions
- Ultra-light bulkheads CNC-machined from premium Swiss 7075 T6 aluminum
- Motor mount bulkhead features the lowest possible motor mount, compatible with stock, modified, and brushless motors
- Super-light composite front Solid Axle with XRAY's own smart quick-change outdrive system for easy outdrive exchange (EU Edition only); no servicing or replacement of drive shaft blades needed, translates into reduced servicing costs
- Specially-optimized drive shaft lengths for specific foam- and rubber-tire racing conditions:
  - US Edition: standard 50mm CVD drive shafts for use with foam tires (generally higher traction than rubber tires); optimum transfer of traction to the wheels
  - EU Edition: longer 52mm front/rear CVD drive shafts positioned more towards centerline in diff/solid axle outdrives to generate more overall traction and make the car easier to drive on low-traction tracks
- Servo saver positioned in absolute centerline of the chassis
- Aluminum center top deck mount specially designed for rubber tires on carpet –decreases front suspension traction and eliminates front tire overheating, ensuring consistent handling during runs
- Front bulkheads with extra reinforcement legs allow for additional chassis flex adjustment from the bottom of the chassis
- Independent front and rear diff height adjustment
- Long front & rear suspension arms for improved traction and easier handling feature optimized shock mounting positions for improving steering and traction
- Suspension arms feature integrated anti-roll bar mounts; rear arms feature two different anti-roll bar mounts for super-fine adjustment of the rear anti-roll bar
- EU Edition includes both front and rear anti-roll bars (front 1.6mm & rear 1.4mm)
- C-hubs with large openings for quicker and easier assembly/disassembly of the CVDs; prevents collision of CVD with C-hub in serious crashes (compatible for the ECS drive shafts)
- C-hubs available in standard caster angles (2°, 4° and 6°); available in two hardnesses (EU – medium, US – hard)
- Rear uprights with integrated 0° toe-in to prevent suspension geometry change in serious crashes; available in two hardnesses (EU – medium, US – hard)
- Steering blocks available in two hardness (EU – medium, US - hard)
- Front suspension arms allow 2mm adjustment of front arm position
- Both front & rear shock towers machined from premium graphite material featuring Quick Roll Center positions and optimized shock absorber positions
- Front shock tower specially machined for ultra-low weight without compromising strength
- Lightweight middle alu layshaft with centrally-positioned spur gear for perfect balance
- Ready and optimized for brushless motor systems
- Ready and optimized for most LiPo battery packs

### **T2'009 Foam-spec Edition — Extra Features:**

- US Foam-Spec Edition (#30 0014) specially designed for foam-tire racing
- 3.5mm ultra-thick solid 6-cell chassis with milled areas allows all parts to be mounted ultra-low
- Wide top deck mounted to chassis via aluminum standoffs provides wide, ultra-stable, solid platform. Top deck features Multi-Flex Technology™ flex points for adjustment of flex and torsion settings from stiff to ultra-stiff.
- Extra-Hard foam-spec front and rear suspension arms – marked with “XH”
- Hard foam-spec steering blocks, C-hubs, and rear uprights
- Super-smooth adjustable Swiss 7075 T6 aluminum front and rear ball-differentials with XRAY Labyrinth Dust Covers™
- Standard-length 50mm HUDY Spring Steel™ CVD drive shafts in front, 50mm Swiss 7075 T6 aluminum drive shafts in rear
- 34T front and rear diff pulleys, 20T center layshaft pulleys
- Light purple and white springs
- 116T 64P spur gear – extra-hard material, wobble-free design
- 1.4mm front anti-roll bar included
- ROAR spec compliant for modified and stock racing

### **T2'009 EU Rubber-spec Edition — Extra Features:**

- EU Rubber-Spec Edition (#30 0013) specially designed for rubber-tire racing
- 2.5mm flexible chassis for 6-cell batteries
- Narrow top deck machined from ultra-thin 2.0mm graphite for improved traction
- Hard rubber-spec front and rear suspension arms – marked with “H”
- Medium rubber-spec steering blocks, C-hubs, and rear uprights
- XRAY Composite Front Solid Axle
- Super-smooth adjustable Swiss 7075 T6 rear ball-differential with XRAY Labyrinth Dust Covers™
- Longer 52mm HUDY Spring Steel™ CVD drive shafts in front, 52mm Swiss 7075 T6 aluminum drive shafts in rear
- 34T front and rear pulleys, 20T center layshaft pulleys
- C2.6 and C2.8 racing springs
- 84T 48P spur gear – extra-hard material, wobble-free design
- 1.2mm front and rear anti-roll bars
- EFRA, ROAR, FEMCA spec compliant for modified and stock racing

| <b>T2'009 US vs. EU Edition — Quick Reference</b> |                              |                              |
|---|------------------------------|------------------------------|
|   | <b>T2'009 US Foam-spec</b>   | <b>T2'009 EU Rubber-spec</b> |
| <b>Chassis:</b>                                   | 3.5mm Chassis – Stiff        | 2.5mm Chassis – Flexible     |
| <b>Top Deck:</b>                                  | Wide Top Deck                | Narrow, Ultra-thin Top Deck  |
| <b>Arms:</b>                                      | Extra-Hard Foam-spec (XH)    | Hard - Rubber-spec (H)       |
| <b>C-hubs:</b>                                    | Hard Foam-spec (H)           | Medium Rubber-spec (M)       |
| <b>Steering Blocks:</b>                           | Hard Foam-spec (H)           | Medium Rubber-spec (M)       |
| <b>Rear Upright:</b>                              | Hard Foam-spec (H)           | Medium Rubber-spec (M)       |
| <b>Drive Shafts:</b>                              | Standard 50mm                | Longer 52mm                  |
| <b>Front Axle:</b>                                | Aluminum Ball-Differential   | Composite Solid Axle         |
| <b>Rear Axle:</b>                                 | Aluminum Ball-Differential   | Aluminum Ball-Differential   |
| <b>Pulleys:</b>                                   | 34T front + rear, 20T center | 34T front + rear, 20T center |
| <b>Shock Springs:</b>                             | Light-Purple / White         | C2.6/C2.8                    |
| <b>Spur Gear:</b>                                 | 116T 64P                     | 84T 48P                      |

## Detailed Specifications:

- All parts fully interchangeable between US Foam-spec and EU Rubber-spec Editions; most parts fully compatible with T2'008
- XRAY Quick Roll-Centers™ – 4 quick roll center adjustments in front, 6 quick roll center adjustments in rear
- Race-proven T2 suspension geometry featuring lightweight, strong, and durable suspension parts
- Rebuildable CVD driveshafts made from special world-renowned, top-secret, self-developed HUDY Spring Steel™; world's tiniest yet most durable driveshafts are hand ground for maximum precision. Recommended for use in front for increased durability
- Rebuildable rear CVD driveshafts made from super-strong, super-light Swiss 7075 T6 aluminum, hardcoated and additionally black coated for stylish look. Recommended for use in rear.
- New super-lightweight wheel axles manufactured from premium HUDY Spring Steel™
- Ultra-lightweight front and rear split bulkheads are CNC-machined from premium Swiss 7075 T6 aluminum, allowing quick and easy access to diff and layshaft
- Centerline drivetrain concept with ultra-narrow chassis positions batteries and electronics near car centerline
- Long top deck design minimizes tweak and increases stability
- Premium-quality, Kevlar® reinforced drive belts
- Lightweight middle layshaft CNC-machined from aircraft aluminum
- Front upper and lower composite bumper made from special composite material to withstand hard impacts
- Compact front foam bumper made from lightweight, high-resilience foam
- Thick 6mm body posts withstand serious crashes
- Front and rear top deck aluminum posts on US Foam-Spec Edition are integral parts of Multi-Flex Technology™
- Lower suspension alu holders with three different roll center positions
- Small, robust rear uprights with built-in 0° toe-in feature two upper roll center positions which are easily adjusted using shims
- Easily adjustable inboard toe-in using included shims
- Easily adjustable wheel offset using optional shims or optional offset wheel hubs (-0.75mm, +0.75mm, +1.5mm)
- 7075 T6 aluminum wheel hubs
- Short XRAY 4-step externally-adjustable shocks
- Shock shafts are specially hardened for maximum strength
- Shock absorber foam inserts for perfect shock rebound
- XRAY self-developed and manufactured ultimate racing springs are manually selected for maximum precision, equal length, and equal damping characteristics. Special set of black racing springs for EU edition car available optionally.
- Small 4° caster C-blocks from special composite material, optional 2° and 6° caster blocks available
- Small, robust steering blocks made from special composite material, featuring two Ackermann positions
- Front and rear shock towers CNC-machined from 3mm graphite material with optimized shock positions for rubber and foam tires, include optimized Quick Roll-Center™ positions
- Super easy to build, set up, maintain, and drive
- Unique XRAY Quick-Saver™ with 5 easily-set Ackermann positions
- Aluminum self-locking wheel nuts

### **Other Specifications:**

- Fully independent, fully-adjustable suspension
- Highly-efficient 2-belt, 4WD system with world's lowest CG
- High-performance Kevlar®-reinforced drive belts
- Centrally-positioned servo saver
- Adjustable Ackermann settings achieved by repositioning the bellcrank post forward or backward + 5 additional positions available through XRAY Quick-Saver™
- Inline battery pack positioned along one side
- Composite battery backstops prevent battery movement on chassis
- Adjustable, ultra-smooth lightweight aluminum ball differential with carbide balls and carbide axial thrustbearing with protective Labyrinth Dust Covers
- Belt tension adjustment in both front and rear bulkheads
- Strong aluminum servo stands
  - Adjustable HUDY Spring Steel™ turnbuckles (steering, front & rear upper links)
  - Complete set of high-speed, blue-sealed ball-bearings, degreased, lightly oiled for maximum efficiency, individually controlled, selected, and inspected

### **Adjustment Possibilities:**

- Fully-adjustable front and rear suspension geometry: caster, camber, toe, anti-dive, anti-squat, ride height, droop, track-width, roll center, wheelbase
- XRAY Quick-Saver™ offers 5 different Ackermann positions for steering adjustment
- Adjustable ball differentials
- XRAY Quick Roll-Centers™
- Adjustable bulkheads for belt-tension control
- Front and rear diff height adjustment
- Adjustable HUDY Spring Steel™ turnbuckles (steering, front & rear upper links)
- Multiple upper and lower shock mounting locations at front and rear
- Externally-adjustable racing shocks (4-step)
- Pre-drilled chassis locations for optional chassis weights
- Adjustable front and rear anti-roll bars (optional for US Edition only)

## T2'009 Details:

### XRAY T2 platform

Since the release of the first T1 in 2001, XRAY has become synonymous with quality, workmanship, performance, and luxury in the RC world. With countless victories and national titles from all around the world — including 20x US National Champion, 3x European Junior Champion and multiple European Vice-Champion — XRAY touring cars have become the world's most favorite touring car as voted in the Reader's Choice Awards and multiple Car of the Year Awards. Over the years, XRAY's Engineering Department has continued its ongoing development, bringing with it a fresh new version of its touring car platform, always superseding and improving upon its predecessors.

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### New XRAY T2'009

Based on the highly successful T2'008 platform, XRAY now presents the improved, refined, and optimized XRAY T2'009.

The T2'009 brings forth all the goodies from the T2'008, loading in all of the latest parts and products supporting the car's high-performance nature to gain a distinct edge in the highly-competitive spectrum of foam- and rubber-tire racing.

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### T2'009 EU Rubber-spec vs. US Foam-spec Editions

Whether you are racing with foam or rubber tires on carpet or asphalt... there is a T2'009 for you. You can choose between the EU or US Editions and have a car that is finely tuned for each specific racing environment. Despite both cars being built from the same platform and sharing all the same goodies, each edition of the car has very small differentiating details that enable you to gain an edge in competitive performance.

| <b>T2'009 US vs. EU Edition — Quick Reference</b> |                              |                              |
|---|------------------------------|------------------------------|
|   | <b>T2'009 US Foam-spec</b>   | <b>T2'009 EU Rubber-spec</b> |
| <b>Chassis:</b>                                   | 3.5mm Chassis – Stiff        | 2.5mm Chassis – Flexible     |
| <b>Top Deck:</b>                                  | Wide Top Deck                | Narrow, Ultra-thin Top Deck  |
| <b>Arms:</b>                                      | Extra-Hard Foam-spec (XH)    | Hard - Rubber-spec (H)       |
| <b>C-hubs:</b>                                    | Hard Foam-spec (H)           | Medium Rubber-spec (M)       |
| <b>Steering Blocks:</b>                           | Hard Foam-spec (H)           | Medium Rubber-spec (M)       |
| <b>Rear Upright:</b>                              | Hard Foam-spec (H)           | Medium Rubber-spec (M)       |
| <b>Drive Shafts:</b>                              | Standard 50mm                | Longer 52mm                  |
| <b>Front Axle:</b>                                | Aluminum Ball-Differential   | Composite Solid Axle         |
| <b>Rear Axle:</b>                                 | Aluminum Ball-Differential   | Aluminum Ball-Differential   |
| <b>Pulleys:</b>                                   | 34T front + rear, 20T center | 34T front + rear, 20T center |
| <b>Shock Springs:</b>                             | Light-Purple / White         | C2.6/C2.8                    |
| <b>Spur Gear:</b>                                 | 116T 64P                     | 84T 48P                      |

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### **LiPo Optimized & Ready**

The high-competition T2 platform was designed primarily for using NiMH battery packs. With the advancement of battery technology, the T2'009 has been optimized and prepared to accommodate the most popular LiPo batteries packs. Special graphite pads are inserted between the top deck and bulkheads which raise the top deck by 2.5mm to allow the fitting of LiPo battery packs with a height 24 mm.

Due to continuous development of LiPo batteries, XRAY cannot guarantee that all LiPo packs will fit due to the fact that there are no set rules for the LiPo pack properties (e.g., sizing).

### **Lipo Conversion Set**

With the enormous popularity of LiPo batteries, XRAY is proud to introduce the LiPo Conversion Set for EU and US Edition cars. This set allows the use of popular LiPo batteries in EU and US Edition cars.

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### **Optimized Drivetrain**

The ultra-efficient XRAY drivetrain has been carried over from the T2'008. With the current trend of high development in the electric motor industry, the drivetrain has been optimized to work efficiently with all most popular motors: stock, modified, and brushless motors. As such the T2'009 comes only with 34T diff pulleys and large 20T center layshaft pulley.

The drivetrain features optimized diffs specifically used for foam and rubber spec racing. For rubber-tire racing the Front Solid Axle is used, while for foam-tire racing the adjustable ball differential is used in both front and rear.

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### **Optimized Drive Shaft Lengths**

When it comes to high-competition design, the transfer of power to the wheels is extremely important and as such the T2'009 uses optimum drive shaft lengths specifically for rubber and foam racing conditions.

For rubber-tire racing using larger-diameter rubber tires, longer 52mm drive shafts are used to allow the drive shafts to be positioned more towards the car centerline in the front diff/solid axle outdrives. This generates more overall traction and makes the car easier to drive on low-traction tracks.

For foam-tire racing using smaller-diameter foam tires, standard 50mm drive shafts are used as the foam tires have generally higher traction than rubber tires and as such the shorter drive shafts give optimum torque transfer to the wheels.

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### **New Super-Lightweight Drive Axles**

To reduce rotating weight the T2'009 features super-lightweight wheel axles which have the outer diameter specially ground to remove the material while keeping the same strength thanks to the use of HUDY Spring Steel™ material. The lightweight drive axles reduce rotating mass up to 35% compared to regular drive axles.

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### **New Rear Drive Shafts**

With high-competition performance in mind, the rotating mass of the drivetrain was reduced. The T2'009 features lightweight aluminum drive shafts machined from premium Swiss 7075 T6, hard-anodized and additionally black coated for stylish looks. The aluminum drive shafts are designed for use in the rear, and come in both lengths specifically for EU and US Editions

To maximize durability and safety during runs (and to better withstand hard crashes), super-strong HUDY Spring Steel™ drive shafts are used at the front of the car.

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### **Lightweight Composite XRAY Solid Axle**

Rotating mass is one of the most significant influences on the performance of an RC racecar. With the great success of the T2'008, the T2'009 features a unique lightweight composite XRAY Front Solid Axle. The Front Solid Axle has a very stiff structure and ultra-light weight that was achieved by molding the entire solid axle from XRAY's own self-formulated composite material.

Outdrives are fully exchangeable which allows very easy and comfortable servicing, while the unique drive shaft connection — eliminating the former drive shaft blades — enables direct power transfer to the axle and eliminates play between the drive shaft and outdrives, improving steering precision and increasing overall steering.

The XRAY Front Solid Axle is included only in the EU Edition, but is available as an option for the US Edition.

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### **Aluminum XRAY Ball Differential**

The T2'009 features a high-competition, super-smooth Aluminum Ball Differential. Manufactured from the premium Swiss 7075 T6 and additionally hard anodized to increase the lifespan of the outdrives. The differential is externally adjustable and comes factory pre-assembled.

XRAY's innovative and smart Labyrinth Dust Cover™ diff protection system has been carried over from previous T1/T2 platforms where it has been very successfully used for many years. The special internal labyrinth design of the diff covers prevents dirt, debris, and carpet fibers from getting into the differential, thus reducing servicing and ensuring long life.

The XRAY Aluminum Ball Differential features carbide balls and a high-quality carbide thrustbearing for ultra-smooth running.

The EU Edition features the XRAY Aluminum Ball Differential in rear, while the US Edition features the diff at both front and rear.

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### **Ultra-lightweight Aluminum Bulkheads**

The ultra-lightweight bulkheads have been carried over from the T2'008 and are a work of engineering art, where luxury meets simplicity and practicality. The bulkheads are CNC-machined from premium Swiss 7075 T6 aluminum and are strategically machined to provide the lightest possible skeletal support framework for the car. Thanks to the ultra-low platform it was possible to create the lowest, smallest, and lightest bulkheads ever. The bulkheads are color-coated in a distinctive orange color. (Note: color may vary slightly between products).

The rear bulkheads feature a split design, allowing the rear suspension to be mounted to separate bulkheads while the center layshaft sits on its own, super-narrow bulkheads which are positioned closer to the center of the chassis. XRAY's legendary attention to detail is noticeable in all the precisely chamfered edges. The split design of the bulkheads also enables super-easy access to front and rear differentials and the middle layshaft. Exchanging diffs and spur gear has never been quicker or easier.

As with previous XRAY cars, both front and rear bulkheads feature integrated belt-tension adjustment through the use of adjustable bearing eccentric holders, eliminating the need for a separate belt tensioner. All ball-bearings turn in composite hubs to reduce friction and improve drivetrain efficiency.

XRAY's attention to the detail and perfection is evident with their TQM (Total Quality Management) approach. Not only are all bulkheads inspected during the production process, but they are also mounted to the chassis by expertly-trained staff to verify that the car's "backbone" has been perfectly manufactured. So when you open the box, you will see and appreciate the beauty.

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## **2 Different Chassis**

There are 2 different chassis available for the T2'009, each specially designed and optimized for the particular type of racing conditions where the car will be used. The EU Edition was designed for rubber tire racing, features a 2.5mm thick chassis CNC-machined from premium grade graphite material, along with slots for 6-cell batteries. Standard 5-or 6-cell battery packs can be used as well as LiPo batteries. The US Edition was designed for 6-cell foam tire racing, and features an ultra-thick 3.5mm CNC-machined chassis of premium-grade graphite material. Both EU and US chassis will accommodate regular RC car LiPo batteries.

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### **US Edition Milled Chassis**

The extra-thick, extra-stiff chassis of the US Edition features top milled pockets where all parts are connected to or mounted to the chassis. This allows bulkheads and all other parts to be mounted very low, in fact they are at the level as the standard 2.5mm chassis. The extra thickness of the chassis enables the car to achieve an ultra-stiff torsion and flex setting required for high-competition foam-tire racing. XRAY knows that even the smallest details have an impact on the handling and performance of the car, so every chassis is CNC-machined in-house by XRAY using the most modern German milling machines; these machines are fully robotically controlled to ensure that every chassis meets the tightest manufacturing tolerances.

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### **US Edition Top Deck**

The US Edition top deck is purposefully wider in the front, allowing it to be connected to the chassis with aluminum stands, creating a solid platform for high-traction foam-tire racing. The rear separate top deck mount features the same extra-wide design, allowing the rear top deck mount to be connected to the chassis via aluminum stands.

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### **EU Edition Top Deck**

The EU Edition top deck was specially designed and optimized for rubber-tire racing. The super-narrow and long design gives appropriate torsion and flex, reducing unwanted tweak in crashes. Also, the top deck is machined from thinner graphite material to provide higher grip.

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### **Top Deck Mount**

The center aluminum top deck is used for rubber-tire carpet racing which permits decreased front suspension traction and eliminates front tires overheating, ensuring consistent handling throughout an entire run. The aluminum center top deck mount can be easily mounted or removed depending on the particular racing conditions.

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### **Front Bulkhead Reinforcement Legs**

The front bulkheads were specially designed to allow adjustment of front chassis flex for different racing conditions. The lower part of the front bulkheads features reinforcement legs which can be easily mounted to the chassis (via 2 extra screws) which influences the front flex of the chassis; removing the screws from the reinforcement legs gives additional chassis flex.

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### **Diff Height Adjustment**

Both front and rear bulkheads feature independent diff height adjustment. By rotating the diff eccentric holders, the height of the diff can be adjusted by 1mm. Optional eccentric holders with 2mm offset are available which allows diff height adjustment of 2mm.

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### **Kevlar® Drive Belts**

The 2-belt 4WD drivetrain concept provides maximum efficiency and highest performance using Kevlar®-reinforced drive belts for ultra-high durability. Narrow (3mm) front and rear drive belts have been specially ground for minimum thickness and flexibility.

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### **Centrally-positioned Layshaft**

The middle layshaft is strategically positioned towards the center of the chassis on separate, super-narrow middle layshaft bulkheads positioned along the chassis centerline. The middle drive pulleys are positioned along side of the main spur gear and as such the drivetrain energy is transmitted from the motor through the centrally-positioned spur gear to both middle layshaft pulleys... ensuring maximum balance of the car.

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### **Alu Middle Layshaft**

The aluminum layshaft is strategically CNC-machined to minimize rotating weight without compromising strength or integrity. The hollow layshaft is perfectly round with zero runout, eliminating drivetrain vibration and producing a positive balance. Composite pulleys key solidly to the layshaft.

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### **Proven Suspension Geometry**

From the narrow arms, through the tiny front and rear suspension blocks, to the small and robust steering blocks, every suspension part has been specially designed and optimized to provide responsive racing characteristics in all racing conditions. Over the years XRAY has successfully gained and utilized extensive suspension geometry knowledge and self-developed suspension stiffness technology, which have been utilized when designing suspension parts. The ultra-lightweight suspension parts are molded from a special composite material that makes the parts very light yet very durable to withstand the rigors of high-performance racing.

The T2'009 features optimized suspension parts carried over from the T2'008. The arms feature a single optimized shock mounting position and integrated anti-roll bar mounts. The rear arms feature two anti-roll bar mounts for super-fine adjustment of the anti-roll bar.

The EU Rubber-spec Edition features standard hard composite mixture arms (marked "H"). The US Foam-spec Edition includes well-proven, extra-hard arms (marked "XH") manufactured from specially-formulated composite compounds which makes the arms extra stiff.

The front suspension arms allow 3mm adjustment of front arm position.

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### **C-hubs**

The T2'009 C-hubs are carried from the T2'008 as well and feature large openings for quicker & easier assembly/disassembly of the CVDs. The entire CVD assembly can be easily inserted/removed through the C-hub without the need for disassembly. The large openings prevent collision of CVD with C-hub in serious crashes and are optimized for use with optional ECS drive shafts.

The C-hubs are available in all standard caster angles (2°, 4° and 6°) and are also available in two different hardnesses that are optimized for particular racing conditions. The EU Edition includes medium hardness (M) C-hubs specially optimized for rubber-tire racing, while the US Edition includes hard hardness (H) C-hubs that are well proven to provide a solid and stiff suspension for foam-tire racing.

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### **Rear Uprights**

The rear uprights feature built-in 0° toe to ensure stability and prevent suspension geometry changes in hard crashes. There are two different roll center positions on the rear uprights, and more roll center positions can be easily adjusted by adding shims between the upright and the turnbuckle ball joint.

The rear uprights feature small but robust 5x10x4 ball-bearings to minimize unsprung weight.

The rear uprights are available in two different hardnesses which were optimized for particular racing conditions. The EU Edition includes medium hardness (M) uprights specially optimized for rubber-tire racing, while the US Edition includes hard hardness (H) uprights that are well proven to provide a solid and stiff suspension for foam-tire racing.

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### **Steering Blocks**

The small and tough steering blocks each feature two Ackermann positions. The front steering blocks also feature small but robust 5x10 ball-bearings to minimize unsprung weight.

The steering blocks are available in two different hardnesses which optimized for particular racing conditions. The EU Edition includes medium hardness (M) steering blocks specially optimized for rubber-tire racing, while the US Edition includes hard hardness (H) steering blocks that are well proven to provide a solid and stiff suspension for foam-tire racing.

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### **Anti-Roll Bars**

The T2'009 EU edition includes optimum standard 1.6mm front and 1.4 rear anti-roll bars. The US edition features 1.4mm front anti-roll bar. The anti-roll bars are mounted with the included composite holders to the front and rear bulkheads, and are easily mounted to the integrated anti-roll bar mounts on the suspension arms.

For easy recognition the anti-roll bar has two laser-engraved stripes (representing each thickness) for easy and instant recognition. Optional anti-roll bars are available for super-fine and precise anti-roll bar adjustment.

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### **XRAY Quick Roll-Centers™**

XRAY's self-developed Quick Roll-Centers™ make setup quick & easy. The front and rear shock towers feature pre-set optimized roll center positions. Using the eccentric aluminum roll center holders you can easily choose one of 4 quick roll-center positions on the front shock tower; the rear shock tower features two extra positions, making a total of 6 different quick roll-center positions. Easy, smart, quick.

The extra positions for Quick Roll-Center™ positions allow the entire rear upper link to be positioned higher for improved cornering speeds in long sweepers on open tracks.

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### **Graphite Shock Towers**

The super-low front and rear shock towers are CNC-machined from premium 3mm thick graphite material to guarantee maximum strength and long life, and the lower height allows the shocks to be mounted lower thus making the CG lower. The front shock tower was specially machined for ultra-low weight without compromising strength.

The shock towers feature optimized shock mounting positions for short shock absorbers, and the feature different positions for Quick Roll Center™ settings. The all-in-one shock towers are optimized for use with either rubber or foam tires.

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### **Short XRAY Racing Shocks**

The T2'009 features the short, race-proven, externally-adjustable XRAY racing shocks carried over from T2'008. The short shock bodies and shock rods were designed for improved suspension lift and lower CG.

The XRAY externally-adjustable racing shocks allow quick & easy damping adjustment to up to 4 different damping settings without disassembly. The threaded shock bodies enable easy and fine ride height adjustment. The shocks also feature foam membrane inserts for smoother shock operation. Shock rods are specially hardened to guarantee long life and maximum strength.

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### **Low-CG Touring Car Platform**

The ultra-low touring car platform of the T2'008 has been carried over to the T2'009 to provide the world's lowest CG ever.

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### **Narrow Chassis**

The overall ultra-narrow chassis platform was made possible thanks to ultra-narrow positioning of middle layshaft bulkheads in the centerline of the chassis. All electronics are positioned close to the chassis centerline, improving weight transition during quick direction changes in racing.

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### **XRAY Quick-Saver™**

The hugely successful XRAY Quick-Saver™ has been carried from the T2'008, it being another innovation from the design boards of XRAY's Engineering Department. Thanks to the fully-adjustable Quick-Saver™, in a matter of seconds you can change the steering characteristics by adjusting the servo saver to one of 5 preset Ackermann positions. The servo saver comes factory pre-built, guaranteeing exceptionally smooth, responsive, and precise steering. The alloy central shaft features a pre-installed strong preload spring.

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### **Adjustable Steering Bell-crank**

An adjustable position steering bell-crank is also used to change steering Ackermann settings. By turning a pair of composite eccentric bushings in the chassis and top deck, you can move the complete assembly forward or backward. This is in addition to the five Quick-Saver™ Ackermann positions. The bell-crank is supported by two ball-bearings.

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### **Precision Spur Gears**

Precision-molded spur gears are made from XRAY's exclusive secret blend of composite material, allowing the gear to run true and super quiet and be robust enough to handle low-wind modified motors or brushless motors. The spur gears are strategically designed to have the lowest possible weight while staying strong and light. Each gear is stamped with the tooth number for easy identification.

The EU Rubber-spec Edition features an 84T 48-pitch spur gear, while the US Foam-spec Edition features a 116T 64-pitch spur gear.

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### **Premium Ball-Bearings**

- Fully ball-bearing equipped; 22 bearings in the kit
- High-speed, blue-sealed ball-bearings throughout the drivetrain for maximum efficiency
- Highest tolerance, maximum performance bearings
- Small-size ball-bearings used in steering blocks and uprights reduce unsprung weight
- Ball-bearings are degreased and lightly oiled with Aero Shell® Fluid 12 for maximum smoothness and long life
- High-quality carbide thrust bearings for adjustable Aluminum Ball Differentials

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### **Suspension Holders**

The T2'009 uses the same smart suspension holders as the rest of the T2 platforms. The aluminum inserts in the composite holders guarantee that geometry and setup will not change and will be retained even after hard crashes.

There are 3 different suspension composite holders that enable easy roll center setup. The standard suspension holder gives a 0mm roll center, while two eccentric suspension holders raise or lower the roll center by 0.75mm.

The smart XRAY geometry uses variable-thickness shims between the bulkheads and suspension holders to enable easy rear toe-in adjustment. However, you can easily remove the shims which will narrow the suspension, and then add wheel offset shims to reclaim track-width.

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### **HUDY Spring Steel™ CVDs**

The T2'009 constant velocity drives (CVDs) are exclusively manufactured from special world-renowned, top-secret, self-developed HUDY Spring Steel™. The T2'009 drive shafts are the world's tiniest yet most durable driveshafts used in electric touring cars.

The drive shafts lengths have been optimized for both rubber- and foam-tire racing, and as such the EU Edition features new longer 52mm drive shafts while the US Edition features standard length 50mm drive shafts. Spring steel drive shafts are recommended to use in the front only.

The drive shafts are strategically lightened – see the hollow end of the dogbone – to guarantee the lowest possible weight without compromising strength or durability. These specially-lightened drive shafts can only be manufactured from special HUDY Spring Steel™ which was developed

for extreme racing conditions. The drive shafts have been additionally hand-ground for maximum precision and to provide true rotation and unbinding drivetrain operation.

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### **Alu Hex Hubs**

Ultra-lightweight wheel hex drive hubs are CNC-machined from 7075 T6 aluminum. These ultra-true hex hubs are specially machined to reduce rotating weight while guaranteeing wobble-free wheel mounting. Optional offsets are available (-0.75, +0.75, +1.5mm).

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### **HUDY Spring Steel™ Turnbuckles**

All adjustable turnbuckles used in the T2'009 are manufactured from world-renowned, ultra durable HUDY Spring Steel™. The turnbuckles have incredible long life and maximum strength.

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### **Shock Pistons**

XRAY keyed shock pistons can be used to make adjustable or non-adjustable shocks. Along with the 2-piece adjustable shock pistons, 3 different non-adjustable pistons are included.

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### **XRAY Racing Springs**

Both EU Rubber-spec and US Foam-spec Editions feature shock springs which have been carefully selected for different racing conditions. The EU Edition features proven C2.6/C2.8 springs, while the US Edition features light-purple and white springs.

As with all other XRAY springs, these springs were manually measured and selected to guarantee precisely equal length and damping characteristics.

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### **XRAY Selected Springs**

For additional tuning, XRAY offers complete sets of ultimate shock springs. XRAY self-developed and manufactured ultimate racing springs are manually selected for maximum precision, equal length, and equal damping characteristics. Available separately or as an ultimate set #308390 and #308380, along with the new line of black-coated, laser-engraved springs.

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### **Body Posts**

Beefy 6mm thick body posts are made from special composite material that provides maximum strength but sufficient flex to reduce body post breakage in hard crashes or if you flip the car over. The body supports are rounded to have a better fit and provide better support to the car body.

For ultimate tuning and adjustment, XRAY offers optional body height adjustable body posts which allow the independent front & rear body height adjustment by +1mm or +2mm.

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### **Front Bumper**

The compact front foam bumper is manufactured from high-resilience lightweight foam. The front lower composite bumper and upper bumper holder are molded from rigid composite material to withstand heavy crashes.

An optional stiffer foam bumper is available (#301223) as well as an impact-absorbing lower bumper (#301203).

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### **Adjustment Possibilities**

The extensive and impressive range of adjustment possibilities includes: caster, camber, toe, anti-dive, anti-squat, ride height, downstops, track-width, lower roll center, Quick Roll Center™, steering roll center, wheelbase, Ackermann, belt-tension adjustment, Multi-Flex Technology™ (chassis and top deck flex), 4-step adjustable shocks, adjustable diffs (US and EU Editions), and adjustable front XRAY Multi-Diff™ (EU Edition only).

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### **Chassis Balance**

The chassis design focuses on balanced weight distribution and weight transfer. The chassis features pre-drilled holes for additional weights for optimum car balancing. Centerline holes are pre-drilled for easy balancing with the HUDY Chassis Balancing Tool #107880.

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### **Premium HUDY Greases**

The T2'009 includes premium HUDY Graphite and Diff greases.

*HUDY Graphite Grease* is a high-performance, advanced-technology semi-fluid lubricant which incorporates both extreme pressure additives and finely-dispersed graphite for load carrying. It is intended primarily for the lubrication of rotating parts and loaded gears. In addition to providing outstanding load carrying, it is formulated to have excellent adhesion and resistance to "fling-off" under extreme conditions. The grease reduces wear and increase the parts life.

*HUDY Diff Grease* is a high-performance, model racing car general-purpose silicone based grease, formulated to provide extra protection against wear, corrosion, and water. HUDY Diff Grease is recommended for most types of rotating and moving parts in any RC car. This silicone grease is especially well-suited for use in ball differentials, axial (thrust) bearings, and in any other ball-bearings that require grease. Suggested for use in any heavy-duty application where high pressures or loads are present. This grease provides excellent protection against rust and corrosion while resisting water wash-out, making it particularly suitable for racing in wet conditions. The silicone grease operates within a large temperature spectrum and will work in all extreme conditions up to and over 100°C.

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### **Optional Battery Holder**

Being a high-competition racing car, the T2'009 uses tape to hold the batteries to the chassis to reduce unnecessary weight. HUDY Fibre-Reinforced Tape #107870 is recommended by the Team XRAY factory racing team for high-competition racing.

The chassis also features holes for an optional graphite battery strap for 6-cell battery pack (#306163) which features the XRAY Smart Battery Holder System™. A captured aluminum wheel enables you to easily secure the battery strap without clips. Easy, smart, quick.

The race-oriented XRAY battery holder was designed to ensure that it won't affect chassis stiffness even if you tighten the capture wheel excessively.

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### **XRAY Set-up Book**

The T2'009 remains the most adjustable electric touring car in the world. Whether you are a hardcore racing fanatic or a club-level sportsman, you can very easily adjust the T2'009 to suit your racing style, the race track, and all track conditions. The T2'009 features the bestselling XRAY Set-up Book with more than 50 pages loaded with high-quality pictures and easy-to-read and understand RC car set-up explanations. Whether you are a novice driver or an experienced racer, you can easily learn many set-up tips & tricks and improve your set-up skills, ultimately translating into improved racing performance with your T2'009.

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**XRAY Instruction Manual**

XRAY Instruction Manuals have become the industry standard, being simply the best manuals you will ever get with an RC model car. Whether you are a first-time builder or an experienced racer, all the instructions are straight-forward and easy to understand. The full-colour instruction manual contains large 3D illustrations that show all assembly details in the clearest possible way.

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**XRAY VIP Customer Treatment**

Owning an XRAY model racing car is an experience on its own. Not only will you own the most premium luxury model racing car in the world, but you will also become a member of the prestigious family of XRAY owners with direct support and service from the XRAY factory. XRAY brings you the most up-to-date RC Web site on the Internet, with daily racing news and latest product developments. If you have any questions, problems or comments, you can ask the XRAY Support Team or any XRAY Factory Team Driver on the XRAY Support Forum. You can even upload your own set-up sheets or download from the thousands of different set-up sheets available from all around the world at the exclusive XRAY Virtual Set-up Sheet Database, the world's largest set-up sheet database. And that is only the start of the VIP treatment you get by joining Team XRAY.