BEFORE YOU START

The X1 is a high-competition, high-quality, 1/10-scale Formula car intended for persons aged 16 years and older with previous experience building and operating RC model racing cars. This is not a toy; it is a precision racing model. This model racing car is not intended for use by beginners, inexperienced customers, or by children without direct supervision of a responsible, knowledgeable adult. If you do not fulfill these requirements, please return the kit in unused and unassembled form back to the shop where you have purchased it.

Before building and operating your X1, YOU MUST read through all of the operating instructions and instruction manual and fully understand them to get the maximum enjoyment and prevent unnecessary damage. Read carefully and fully understand the instructions before beginning assembly.

Make sure you review this entire manual, download and use set-up book from the web, and examine all details carefully. If for some reason you decide The X1 is not what you wanted or expected, do not continue any further. Your hobby dealer cannot accept your X1 kit for return or exchange after it has been partially or fully assembled.

Contents of the box may differ from pictures. In line with our policy of continuous product development, the exact specifications of the kit may vary without prior notice.

CUSTOMER SUPPORT

We have made every effort to make these instructions as easy to understand as possible. However, if you have any difficulties, problems, or questions, please do not hesitate to contact the XRAY support team at info@teamxray.com. Also, please visit our Web site at www.teamxray.com to find the latest updates, set-up information, option parts, and many other goodies. We pride ourselves on taking excellent care of our customers.

You can join thousands of XRAY fans and enthusiasts in our online community at:

www.teamxray.com

Failure to follow these instructions will be considered as abuse and/or neglect.

SAFETY PRECAUTIONS

Contains:

LEAD (CAS 7439-92-1) ANTIMONY (CAS 7440-36-0)

WARNING: This product contains a chemical known to the state of California to cause cancer and birth defects or other reproductive harm.

CAUTION: CANCER HAZARD

Contains lead, a listed carcinogen. Lead is harmful if ingested. Wash thoroughly after using. DO NOT use product while eating, drinking or using tobacco products. May cause chronic effects to gastrointestinal tract, CNS, kidneys, and blood. MAY CAUSE BIRTH DEFECTS.

When building, using and/or operating this model always wear protective glasses and gloves.

Take appropriate safety precautions prior to operating this model. You are responsible for this model’s assembly and safe operation! Please read the instruction manual before building and operating this model and follow all safety precautions. Always keep the instruction manual at hand for quick reference, even after completing the assembly. Use only genuine and original authentic XRAY parts for maximum performance. Using any third party parts on this model will void guaranty immediately.

Improper operation may cause personal and/or property damage. XRAY and its distributors have no control over damage resulting from shipping, improper construction, or improper usage. XRAY assumes and accepts no responsibility for personal and/or property damages resulting from the use of improper building materials, equipment and operations. By purchasing any item produced by XRAY, the buyer expressly warrants that he/she is in compliance with all applicable federal, state and local laws and regulation regarding the purchase, ownership and use of the item. The buyer expressly agrees to indemnify and hold harmless XRAY for all claims resulting directly or indirectly from the purchase, ownership or use of the product. By the act of assembling or operating this product, the user accepts all resulting liability. If the buyer is not prepared to accept this liability, then he/she should return this kit in new, unassembled, and unused condition to the place of purchase.

IMPORTANT NOTES – GENERAL

- This product is not suitable for children under 16 years of age without the direct supervision of a responsible and knowledgeable adult.
- Carefully read all manufacturers warnings and cautions for any parts used in the construction and use of your model.
- Assemble this kit only in places away from the reach of very small children.
- First-time builders and users should seek advice from people who have building experience in order to assemble the model correctly and to allow the model to reach its performance potential.
- Exercise care when using tools and sharp instruments.
- Take care when building, as some parts may have sharp edges.
- Keep small parts out of reach of small children. Children must not be allowed to put any parts in their mouth, or pull vinyl bag over their head.
- Read and follow instructions supplied with paints and/or cement, if used (not included in kit).
- Immediately after using your model, DO NOT touch equipment on the model such as the motor and speed controller, because they generate high temperatures. You may seriously burn yourself sincerely touching them.
- Follow the operating instructions for the radio equipment at all times.
- Do not put fingers or any objects inside rotating and moving parts, as this may cause damage or serious injury as your finger, hair, clothes, etc. may get caught.
- Be sure that your operating frequency is clear before turning on or running your model, and never share the same frequency with somebody else at the same time. Ensure that others are aware of the operating frequency you are using and when you are using it.
- Use a transmitter designed for ground use with RC cars. Make sure that no one else is using the same frequency as yours in your operating area. Using the same frequency at the same time, whether it is driving, flying or sailing, can cause loss of control of the RC model, resulting in a serious accident.
- Always turn on your transmitter before you turn on the receiver in the car. Always turn off the receiver before turning your transmitter off.
- Keep the wheels of the model off the ground when checking the operation of the radio equipment.
- Disconnect the battery pack before storing your model.
- When learning to operate your model, go to an area that has no obstacles that can damage your model if your model suffers a collision.
- Remove any sand, mud, dirt, grass or water before putting your model away.
- If the model behaves strangely, immediately stop the model, check and clear the problem.
- To prevent any serious personal injury and/or damage to property, be responsible when operating all remote controlled models.
- The model car is not intended for use on public places and roads or areas where its operation can conflict with or disrupt pedestrian or vehicular traffic.
- Because the model car is controlled by radio, it is subject to radio interference from many sources that are beyond your control. Since radio interference can cause momentary loss of control, always allow a safety margin in all directions around the model in order to prevent collisions.
- Do not use your model:
  - Near real cars, animals, or people that are unaware that an RC car is being driven.
  - In areas where children and people gather
  - In residential districts and parks
  - In limited indoor spaces
  - In wet conditions
  - In the street
  - In areas where loud noises can disturb others, such as hospitals and residential areas.
- At night or anytime your line of sight to the model may be obstructed or impaired in any way.

To prevent any serious personal injury and/or damage to property, please be responsible when operating all remote controlled models.
**IMPORTANT NOTES - ELECTRICAL**

- Insulate any exposed electrical wiring (using heat shrink tubing or electrical tape) to prevent dangerous short circuits. Take maximum care in wiring, connecting and insulating cables. Make sure cables are always connected securely. Check connectors for if they become loose. And if so, reconnect them securely. Never use R/C models with damaged wires. A damaged wire is extremely dangerous, and can cause short-circuits resulting in fire. Please have wires repaired at your local hobby shop.
- Low battery power will result in loss of control. Loss of control can occur due to a weak battery in either the transmitter or the receiver. Weak running battery may also result in an out of control car if your car’s receiver power is supplied by the running battery. Stop operation immediately if the car starts to slow down.
- When not using RC model, always disconnect and remove battery.
- Do not disassemble battery or cut battery cables. If the running battery short-circuits, approximately 3000W of electricity can be discharged, leading to fire or battery explosion. New assembled battery or cut battery cables.
- Use a recommended charger for the receiver and transmitter batteries and follow the instructions correctly. Over-charging, incorrect charging, or using inferior chargers can cause the batteries to become dangerously hot.

**R/C & BUILDING TIPS**

- Make sure all fasteners are properly tightened. Check them periodically.
- Make sure that chassis screws do not protrude from the chassis.
- For the best performance, it is very important that great care is taken to ensure the free movement of all parts.
- Clean all ball-bearings so they move very easily and freely.
- Tap or pre-thread the plastic parts when threading screws.
- Self-tapping screws cut threads into the parts when being tightened. Do not use excessive force when tightening the self-tapping screws because you may strip out the thread in the plastic. We recommended you stop tightening a screw when you feel some resistance.
- Ask your local hobby shop for any advice.

**WARRANTY**

XRAY guarantees this model kit to be free from defects in both material and workmanship within 30 days of purchase. The total monetary value under warranty will in no case exceed the cost of the original kit purchased. This warranty does not cover any components damaged by use or modification or as a result of wear. Part or parts missing from this kit must be reported within 30 days of purchase. No part or parts will be sent under warranty without proof of purchase. Should you find a defective or missing part, contact the local distributor. Service and customer support will be provided through local hobby store where you have purchased the kit, therefore make sure to purchase any XRAY products at your local hobby store. This model racing car is considered to be a high-performance racing vehicle. As such this vehicle will be used in an extreme range of conditions and situations, all which may cause premature wear or failure of any component. XRAY has no control over usage of vehicle once they leave the dealer, therefore XRAY can only offer warranty against all manufacturer’s defects in materials, workmanship, and assembly at point of sale and before use. No warranties are expressed or implied that cover damage caused by what is considered normal use, or cover or imply how long any model cars’ components or electronic components will last before requiring replacement.

Due to the high performance level of this model car you will need to periodically maintain and replace consumable components. Any and all warranty coverage will not cover replacement of any part or component damaged by neglect, abuse, or improper or unreasonable use. This includes but is not limited to damage from crashing, chemical and/or water damage, excessive moisture, improper or no maintenance, or user modifications which compromise the integrity of components. Warranty will not cover components that are considered consumable on RC vehicles. XRAY does not pay or refund shipping on any component sent to XRAY or its distributors for warranty. XRAY reserves the right to make the final determination of the warranty status of any component or part.

**Limitations of Liability**

XRAY makes no other warranties expressed or implied. XRAY shall not be liable for any loss, injury or damages, whether direct, indirect, special, incidental, or consequential, arising from the use, misuse, or abuse of this product and/or any product or accessory required to operate this product. In no case shall XRAY’s liability exceed the monetary value of this product.

**Take adequate safety precautions prior to operating this model. You are responsible for this model’s assembly and safe operation.**

**Disregard of the any of the above cautions may lead to accidents, personal injury, or property damage. XRAY MODEL RACING CARS assumes no responsibility for any injury, damage, or misuse of this product during assembly or operation, nor any addictions that may arise from the use of this product. All rights reserved.**

In line with our policy of continuous product development, the exact specifications of the kit may vary. In the unlikely event of any problems with your new kit, you should contact the model shop where you purchased it, quoting the part number.

We do reserve all rights to change any specification without prior notice. All rights reserved.
**NOT INCLUDED**

XRAY offers wide range of optional tuning parts which are listed in a table like this. Please refer to the exploded view of each main section to verify which part is included in the kit while all other parts are available only as optional parts and must be purchased separately.

### Sample of Optional Parts

- **Option 1**: #37XXXX
- **Option 2**: #37XXXX
- **Option 3**: #37XXXX

### Equipment Included

- **HUDY Premium Silicone Oils**: Oil 600cSt (#106360) Oil 10000cSt (#106510)
- **Diff Grease**: (HUDY #106211)

### Equipment Required

- **Transmitter**
- **Receiver**
- **Steering Servo**
- **Electric Motor**
- **Pinion Gear and Setscrew**
- **Speed Controller**
- **LiPo Battery**
- **Lexan™ Paint**
- **Battery Charger**
- **Fibre Tape (HUDY #107870)**
- **Double-sided Tape**
- **Bearing Oil (HUDY #106230)**
- **Wheels & Tires & Inserts**
To protect and seal edges of graphite parts, sand edges smooth and then apply CA glue. Do this for: chassis edges and countersunk holes.

Fine sandpaper
Use fine sandpaper to sand smooth the edges of all graphite parts.

Apply only a bit of CA glue in the countersunk holes.
1. FRONT SUSPENSION

FRONT COIL SPRINGS

<table>
<thead>
<tr>
<th>Option</th>
<th>Size (mm)</th>
<th>Color</th>
<th>Description</th>
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<tbody>
<tr>
<td>#372176</td>
<td>1.5</td>
<td>Gold</td>
<td>Soft Option</td>
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<tr>
<td>#372177</td>
<td>2.0</td>
<td>Silver</td>
<td>Soft Option</td>
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<tr>
<td>#372179</td>
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<td>Grey Option</td>
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<tr>
<td>#372180</td>
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</tr>
<tr>
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<td>4.0</td>
<td>Silver</td>
<td>Option</td>
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<tr>
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</tr>
<tr>
<td>#372183</td>
<td>5.5</td>
<td>Grey</td>
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ANTI-ROLL BARS

<table>
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<th>Description</th>
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<td>#372492</td>
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<tr>
<td>#372493</td>
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<td>Option</td>
</tr>
<tr>
<td>#372494</td>
<td>1.4</td>
<td>Option</td>
</tr>
</tbody>
</table>

ALU SHIM 3x6x2.0MM - ORANGE (10)

BALL END 4.9MM WITH THREAD 4MM (2)

ALU ANTI-ROLL BAR BUSHING - ORANGE (2)

BALL JOINT 4.9MM - OPEN (4)

ALU ANTI-ROLL BAR PILOT BALL 4.9MM (2)

X1'17 CHASSIS - 2.5MM GRAPHITE

X1'17 ARM MOUNT PLATE - 2.5MM GRAPHITE

X1'17 GRAPHITE LOWER SUSPENSION ARM 2.5MM

X1'17 GRAPHITE UPPER SUSPENSION ARM 2.5MM

X1'17 FRONT Coil Spring 3.6x6x0.5MM; C=3.5 - Gold (2)

ALU MOUNT 26.5MM - ORANGE (2)

ALU MOUNT 10.8MM - ORANGE (2)

FRONT WHEEL AXLE - HUDY SPRING STEEL™ (2)

SERVO HOLDER - 2.5MM GRAPHITE

ALU SERVO MOUNT - ORANGE

ALU MOUNT 26.5MM - ORANGE (2)

ALU MOUNT 10.8MM - ORANGE (2)

FRONT WHEEL AXLE - HUDY SPRING STEEL™ (2)

ALU MOUNT 26.5MM - ORANGE (2)

ALU MOUNT 10.8MM - ORANGE (2)

FRONT WHEEL AXLE - HUDY SPRING STEEL™ (2)

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FRONT WHEEL AXLE - HUDY SPRING STEEL™ (2)

ALU MOUNT 26.5MM - ORANGE (2)

ALU MOUNT 10.8MM - ORANGE (2)
1. **FRONT SUSPENSION**

**UPPER ARMS**

6x COMPOSITE BALL

2x 6.0mm BALL END

**LOWER ARMS**

NOTE ORIENTATION

2x SHORT COMPOSITE BALL

6.0mm BALL END

**BACKSTOPS**

Adjust the backstop with the set-screw to achieve the maximum steering angle needed. Adjust the steering angle on both L & R sides to the same amount.

**CUTAWAY VIEW**

INITIAL SETTING 19.5mm

**COMPOSITE BALL**

6.0mm BALL END

**BALL END**

**SHORT COMPOSITE BALL**

**5mm**

**STEERING ANGLE**

The adjustable backstops are used to limit the steering angle. Adjust the backstop with the set-screw to achieve the maximum steering angle needed. Adjust the steering angle on both L & R sides to the same amount.
1. FRONT SUSPENSION

These shims adjust the roll-center of the front bottom arm as well as the front ride height. The thickness of the shim depends on the tire diameter. For initial setting, use the 3x6x2mm shim.

**IMPORTANT!** Use the same shim thickness under all 4 posts.

---

For low-traction conditions, as it improves overall car traction.

ALU CHASSIS
Makes the car more stable and easier to drive in particular conditions.

---

The brace makes the car easier to drive. Recommended for high-traction conditions.

---

NOTE ORIENTATION
1. FRONT SUSPENSION

**ECCENTRIC BUSHINGS**

**NOTE ORIENTATION**

All three bushings MUST have same orientation. These bushings adjust the front CASTER.

- **3° CASTER**
- **6° CASTER**
- **9° CASTER**
- **12° CASTER**

**IMPORTANT!**

These eccentric bushings adjust the front CASTER. MORE caster angle = better cornering speed, increased traction rolling. Use on large, open tracks where cornering speed is needed. LESS caster angle = more reactive steering. Use on technical tracks where a lot of steering response is needed.

**ALU CASTER BUSHINGS**

- #372327 CASTER 6°, 9° (3) ALU OPTION
- #372328 CASTER 3°, 12° (3) ALU OPTION

**BEARING OIL**

(HUDY #106230)

**ANTI-ROLL BARS**

- #372491 1.1MM OPTION
- #372492 1.2MM INCLUDED
- #372493 1.3MM OPTION
- #372494 1.4MM OPTION

**FREE MOVEMENT**

Initial setting

All four bushings MUST have same orientation. These bushings adjust the front CAMBER.

- **1.0° CAMBER**
- **1.5° CAMBER**
- **2.0° CAMBER**
- **2.5° CAMBER**

**IMPORTANT!**

These eccentric bushings adjust the front CAMBER. The more camber angle, the more steering there is. However, it makes the car more sensitive and more difficult to drive. Use LESS camber angle for carpet and other high-traction tracks. Use MORE camber on asphalt and low-traction tracks.

**ALU CAMBER BUSHINGS**

- #372325 CAMBER 1.5°, 2.0° (2) ALU OPTION
- #372326 CAMBER 1.0°, 2.5° (3) ALU OPTION
1. FRONT SUSPENSION

When the bar is set, verify that both sides move at the same time. If they do, the bar is set up correctly. If not, make sure that the bar wire is flat.

Set the bar into the center, remove the play in the bushings, and tighten the setscrews fully.

If the sides still do not move at the same time, adjust the length of the bar holders.

When the bar is set, verify that both sides move at the same time. If they do, the bar is set up correctly. If not, make sure that the bar wire is flat.
1. FRONT SUSPENSION

There are two Ackermann positions on the steering block:

- **INNER** position: improved steering response
- **OUTER** position: easier to drive

After assembling the steering block, loosen the set-screw slightly. Use your thumb to press down on the top of the kingpin, then use your other fingers to pull up the steering block. Then tighten the set-screw.

The number of the shims affects the front ride height. Determine the proper amount of shimming based on tire diameter.

- **LOW** traction & bumpy track: 10k cSt (#106510 HUDY)
- **HIGH** traction & flat track: 30k cSt (#106530 HUDY)

**FRONT COIL SPRINGS**

- #372176 C=1.5 - GOLD (SOFT) OPTION
- #372177 C=2.0 - SILVER (SOFT) OPTION
- #372178 C=2.5 - BLACK (SOFT) OPTION
- #372179 C=3.0 - GREY (SOFT) OPTION
- #372180 C=3.5 - GOLD INCLUDED
- #372181 C=4.0 - SILVER OPTION
- #372182 C=5.0 - BLACK OPTION
- #372183 C=5.5 - GREY OPTION

**TIGHTEN**

- FULLY
- GENTLY

Recommended HUDY Silicone Oil

3.2x4.8x0.5mm (5x)

3.2x4.8x0.5mm (2x)

3.2x4.8x0.5mm (1x)

4mm THREAD
2. REAR SUSPENSION

<table>
<thead>
<tr>
<th>ALU NUTS M3</th>
<th>SIDE SPRINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>#296530-B ALU BLUE OPTION</td>
<td>#373584 C=0.6 - SILVER OPTION</td>
</tr>
<tr>
<td>#296530-K ALU BLACK OPTION</td>
<td>#373585 C=0.9 - GOLD INCLUDED</td>
</tr>
<tr>
<td>#296530-O ALU ORANGE OPTION</td>
<td>#373586 C=1.2 - BLACK OPTION</td>
</tr>
<tr>
<td>#960030 STEEL SILVER INCLUDED</td>
<td>#373587 C=1.5 - SILVER OPTION</td>
</tr>
<tr>
<td>#2960031 ALU SILVER OPTION</td>
<td>#373588 C=1.8 - GOLD OPTION</td>
</tr>
</tbody>
</table>

30 3241 PIVOT BALL UNIVERSAL 5.8 MM WITH HEX (4)
37 1075 XT’16 REAR BRACE - 2.5MM GRAPHITE
37 1094 XT’17 PLATE FOR MOUNTS - 2.5MM GRAPHITE
37 1147 XT GRAPHITE 2.5MM REAR POD LOWER PLATE
37 1190 COMPOSITE POD LINK (2)
37 1230 COMPOSITE BODY POST (2)
37 2650 BALL-END 4.2MM - THREADED - HUDY SPRING STEEL™ (2)
37 2662 COMPOSITE BALL-JOINT 4.2 MM (4)
37 3012 XT ALU REAR BULKHEAD - MOTOR (RIGHT)
37 3022 XT ALU REAR BULKHEAD - LEFT
37 3034 XT’17 GRAPHITE REAR BULKHEAD BRACE
37 3066 ALU PIVOT BALL
37 3073-0 ALU REAR BRACE MOUNT 13MM - ORANGE (2)
37 3092 COMPOSITE LOWER & UPPER PIVOT BRACE - LOW ROLL-CENTER
37 3548 XT’16 REAR POD UPPER PLATE - 2.5MM GRAPHITE
37 3585 SIDE SPRING C=0.9 - GOLD (2)
37 3591 COMPOSITE SIDE SPRING HOLDER (2)
37 6361-0 ALU MOUNT 26.5MM - ORANGE (2)

37 8141 XT SIDE LINKAGE TUBE (2)
37 8153 COMPOSITE LINKAGE SHAFT (2)
90 1308 HEX SCREW SB M3x8 (10)
90 2258 HEX SCREW SH M2.5x8 (10)
90 2306 HEX SCREW SH M3x8 (10)
90 3306 HEX SCREW SFH M3x8 (10)
96 0030 NUT M3 (10)
96 0032 NUT M3 (10)
98 1210 PIN 2x1D (10)

#371148 XT ALU 2.0MM REAR POD LOWER PLATE
#371149 XT GRAPHITE 2.0MM REAR POD LOWER PLATE
2. FRONT SUSPENSION

NOTE ORIENTATION

Ensure free, smooth movement without excessive freeplay.

Gently scuff the bottom of the composite lower pivot brace on sandpaper to make the surface slightly rough. This will help the lower pivot brace to grip the chassis surface better.

NOTE ORIENTATION

When the optional 2MM GRAPHITE chassis is used, the optional 2.0mm graphite rear pod plate must be used as well.

When the optional ALU CHASSIS is used, the optional 2.0 alu rear pod plate must be used as well.

<table>
<thead>
<tr>
<th>ALU NUTS M8</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>#296530-B</td>
<td>ALU BLUE</td>
</tr>
<tr>
<td>#296530-K</td>
<td>ALU BLACK</td>
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<tr>
<td>#296530-O</td>
<td>ALU ORANGE</td>
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<tr>
<td>#960030</td>
<td>STEEL SILVER</td>
</tr>
<tr>
<td>#960031</td>
<td>ALU SILVER</td>
</tr>
</tbody>
</table>

#371148
1 ALU 2.0MM REAR POD LOWER PLATE

#371149
1 GRAPHTHE 2.0MM REAR POD LOWER PLATE

#902306
SH M3x6

#903306
SFH M3x6

#903310
SFH M3x10

#960030
ALU SILVER

#960031
INNO

#902306
SH M3x6

#903306
SFH M3x6

#903310
SFH M3x10

#960030
ALU SILVER
Do not tighten fully, pivotballs must turn freely.

Ensure free, smooth movement. If the POD plate does not move freely, untight slightly the nuts of composite pivot brace and tight again.

POD Linkage position

OUTER POSITION (INITIAL SETTING)
The side link is straight, easier to drive.

INNER POSITION
The side link is angled, increased in-corner steering.

Make sure both side springs are tightened equally, to avoid unwanted twist.

SOFTER SPRINGS:
Makes the car easier to drive on low-traction tracks but more difficult to drive on high-traction tracks.

HARDER SPRINGS:
Improves steering response, but also increases traction rolling.
2. REAR SUSPENSION

Very handy, easily externally adjustable body post from Swiss 7075 T6 aluminum. Allows for adjustment of body height by 3mm without needing to change the position on the body post.
The angle of the side tubes has a fine effect on car performance. The angle is adjusted with shims between the pivot ball and the rear brace and/or upper plate. The higher the angle, the stiffer it feels and the less it rolls. The less (flatter) the angle, the softer it feels and the more it rolls.

Add oil in each slot of the COMPOSITE side shock tubes.

**NOTE:** Add oil only in the slots, not on the whole tube. After assembling the side tubes, check for smooth operation. It is very important to re-oil the side tubes, at least once per race day. You may use different oil thicknesses depending on track conditions.

**TIP**
- **For HIGH grip** use SOFTER oils
- **For LOW grip or ASPHALT** use HARDER oils

**HUDY OILS**
- #106510 10000cSt INCLUDED
- #106515 15000cSt OPTION
- #106520 20000cSt OPTION
- #106530 30000cSt OPTION
- #106540 40000cSt OPTION
- #106550 50000cSt OPTION

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- #106520 20000cSt OPTION
- #106530 30000cSt OPTION
- #106540 40000cSt OPTION
- #106550 50000cSt OPTION

**OPTIONAL SIDE SHOCK**
- #378100 - Optional side shock can be used to improve traction in low- and medium-grip conditions. The optional side shock REPLACES the 2 side tubes.

**OPTIONAL PARTS (NOT INCLUDED)**
- #378100 Side Shock Absorber Set
- #362650 Ball End 4.9mm with Thread 6mm (2)
- #303123-0 Alu Shim 3x6x2.0mm - Orange (10)
- #372651 Ball Universal 4.9mm - HUDY Spring Steel™ (2)
- #902308 Hex Screw SH M3x8 (10)
The graphite rear axle is 9g lighter for great weight savings and improved acceleration, but it is more fragile.

**GRAPHITE REAR AXLE SHAFT**

**CERAMIC BALL-BEARING AXIAL F3-8 3x8x3.5mm**

**GRAPHITE REAR AXLE SHAFT**

These eccentric bushings adjust the **RIDE HEIGHT** of the rear pod. Make sure to use the **SAME** eccentric bushings on **BOTH** sides.
### 3. BALL DIFFERENTIAL

- **Diff Grease (HUDY #106211)**
  - Use additional shims to widen the rear track-width. Use the same shims on both sides. For initial assembly use 6.4x8.4x1mm shims.

- **Diff Grease (HUDY #106230)**
  - This nut affects the tightness and stiffness of the rear differential. Tighten the nut gently so the diff does not slip under power, but do not overtighten or the diff balls and/or plates may be damaged.

- **Graphite Rear Axle Shaft**
  - The graphite rear axle is 9g lighter for great weight savings and improved acceleration, but it is more fragile.

- **Ceramic Ball-Bearing Axial F3-8 3x8x3.5**
- **Ceramic Ball 3.175mm (12)**
- **Shim 6.4x8.4x1.0**

**Important Note:**
- The axle must have a very small amount of side play. If there is no side play, the axle may bind and damage the ball bearings.

**Note:**
- Thread the set-screw deep enough into the wheel adaptor so it does not protrude.
- Tighten fully.
Progressive shock system for improved traction and steering characteristics. Shock insert has 3 triangle cuts and is used with piston without holes. The hardness of the shock is influenced not by the holes in the piston, but rather by the insert.

**XRAY SPRINGS**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Spring Type</th>
<th>Hardness</th>
</tr>
</thead>
<tbody>
<tr>
<td>#308263</td>
<td>C = 2.3-2.6 (2)</td>
<td>OPTION</td>
</tr>
<tr>
<td>#308264</td>
<td>C = 2.5-2.8 (2)</td>
<td>OPTION</td>
</tr>
<tr>
<td>#308274</td>
<td>C = 3.2 (2)</td>
<td>INCLUDED</td>
</tr>
<tr>
<td>#308275</td>
<td>C = 3.5 (2)</td>
<td>OPTION</td>
</tr>
<tr>
<td>#308286</td>
<td>C = 3.6 (2)</td>
<td>OPTION</td>
</tr>
<tr>
<td>#308276</td>
<td>C = 3.7 (2)</td>
<td>OPTION</td>
</tr>
<tr>
<td>#308288</td>
<td>C = 3.8 (2)</td>
<td>OPTION</td>
</tr>
<tr>
<td>#308277</td>
<td>C = 3.9 (2)</td>
<td>OPTION</td>
</tr>
</tbody>
</table>

**SHOCK PISTONS**

30 3241 BALL UNIVERSAL 5.8 MM HEX (4)
30 8037 COMPOSITE PISTONS 4-HOLE 1.0-1.2MM, 3-HOLE 1.0-1.2MM
30 8042-O ALU SHOCK ADJUSTABLE NUT - ORANGE (2)
30 8082 SHOCK ABSORBER MEMBRANE (4)
30 8092 SHOCK FOAM INSERTS (4)
30 8316 SHOCK BALL JOINT - OPEN (4)
30 8323 ALU XRAY SHOCK BODY (2)
30 8327-O ALU CAP FOR XRAY SHOCK BODY - ORANGE
30 8333 COMPOSITE SHOCK PARTS FOR ALU SHOCKS

30 8353-O T4 ALU SHOCK CAP NUT WITH VENT HOLE - ORANGE (2)
30 8274 XRAY SPRING-SET C = 2.3
37 8062 X1’17 SHOCK SHAFT
37 8072-O X1’17 ALU SHOCK SPRING COLLAR - ORANGE
90 1303 HEX SCREW SB M3x3 (10)
96 5023 E-CLIP 2.3 (10)
97 0130 O-RING 3 x 1.5 (10)
97 2030 SILICONE O-RING 3 x 2 (10)

**SHOCK PISTON ADJUSTMENT**

- **3 Holes**
  - 1.1mm
  - 1.2mm
  - 1.3mm
- **4 Holes**
  - 1.1mm
  - 1.2mm
  - 1.3mm
  - **INITIAL SETTING**
4. CENTER SHOCK

**SHOCK FILLING**

<table>
<thead>
<tr>
<th>SOFTER OIL</th>
<th>HARDER OIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended for bumpy and low-traction tracks, generates more traction.</td>
<td>Recommended for flat and higher traction tracks, improves steering response.</td>
</tr>
</tbody>
</table>

1. Fully extend the piston rod so the piston is at the bottom of the shock body.
2. Hold the shock upright and slightly overfill the shock body with shock oil.
3. Let the oil settle and allow air bubbles to rise to the top. Slowly move the piston up and down to allow oil into all cavities within the shock body.
4. Extend the piston rod most of the way out of the shock body. Let the shock rest for 5 minutes to allow the air bubbles to escape.
5. Add shock oil as necessary.

**SHOCK OILS**

<table>
<thead>
<tr>
<th>Code</th>
<th>Viscosity</th>
</tr>
</thead>
<tbody>
<tr>
<td>#106310</td>
<td>100cSt</td>
</tr>
<tr>
<td>#106315</td>
<td>150cSt</td>
</tr>
<tr>
<td>#106320</td>
<td>200cSt</td>
</tr>
<tr>
<td>#106325</td>
<td>250cSt</td>
</tr>
<tr>
<td>#106330</td>
<td>300cSt</td>
</tr>
<tr>
<td>#106335</td>
<td>350cSt</td>
</tr>
<tr>
<td>#106340</td>
<td>400cSt</td>
</tr>
<tr>
<td>#106345</td>
<td>450cSt</td>
</tr>
<tr>
<td>#106350</td>
<td>500cSt</td>
</tr>
<tr>
<td>#106355</td>
<td>550cSt</td>
</tr>
<tr>
<td>#106360</td>
<td>600cSt</td>
</tr>
<tr>
<td>#106365</td>
<td>650cSt</td>
</tr>
<tr>
<td>#106370</td>
<td>700cSt</td>
</tr>
<tr>
<td>#106375</td>
<td>750cSt</td>
</tr>
<tr>
<td>#106380</td>
<td>800cSt</td>
</tr>
<tr>
<td>#106390</td>
<td>900cSt</td>
</tr>
<tr>
<td>#106410</td>
<td>1000cSt</td>
</tr>
<tr>
<td>#106420</td>
<td>2000cSt</td>
</tr>
</tbody>
</table>

Be careful not to cross-thread the collar on the shock body.
When installing the shock cap assembly on the shock body, some oil will leak out... this is normal.

Tighten the cap and clean off any excess oil.

After the shock is assembled, the shock rod will push itself out of the shock body fairly quickly.

Follow the next procedure to adjust the rebound:

➊ Release the shock cap by 2-3 turns.

➋ Push the shock shaft fully up. For the first time the extra oil will release through the hole in the alu cap-nut.

➌ Tighten the shock cup. When tightening the shock cap, extra oil will again release through the hole in the alu cap - nut. When tightening, the shock shaft will push out from the shock body.

AFTER THE SHOCK IS ASSEMBLED YOU HAVE TO SET THE SHOCK REBOUND:

REBOUND CHECK:

It is very important to push the shock shaft into the shock body slowly otherwise air can come into the shock body which would create bubbles. 

100% rebound - do not do step 2 and 3
75% rebound - repeat step 2 and 3 until the shock shaft will push out 75% of its length
50% rebound - repeat step 2 and 3 until the shock shaft will push out 50% of its length
25% rebound - repeat step 2 and 3 until the shock shaft will push out 25% of its length
0% rebound - repeat step 2 and 3 until the shock shaft will push out 0% of its length

If the shock shaft does not rebound enough, you will have to refill the shock with shock oil, and then repeat the bleeding and rebound adjustment procedure.

REBOUND ADJUSTMENT

RELEASE 2-3 turns

TIGHTEN FULLY

REBOUND CHECK:

0%

25%

50%

75%

100% CHECK
The length of the shock absorber affects the amount of rear downstop. To adjust, thread the ball-joint on or off the bottom spring cap.
These shims adjust the horizontal angle of the steering linkages. When thicker shims are used here, in-corner steering increases, but the car becomes more difficult to drive.

ALTERNATIVE 1
STANDARD STEERING ARM MOUNTING
(INITIAL SETTING)

Standard steering mounting system provides maximum steering response and makes the car more precise.

The steering arm has two position for servo linkage mounting. Always use this position

INNER position: Less Ackermann, makes the car more responsive, improves in-corner steering.

OUTER position: More Ackermann, makes the car easier to drive, improves cornering speed.

NOTE ORIENTATION

#372541 - ALU ADJUSTABLE SERVO SAVER SET
These shims adjust the horizontal angle of the steering linkages. When thicker shims are used here, in-corner steering increases, but the car becomes more difficult to drive.

FLOATING STEERING ARM MOUNTING

Floating steering mounting system makes the car easier to drive over curbs and on bumpy tracks. Prevents the car to over steer.

There are two Ackermann positions on the steering arm.

INNER position: Less Ackermann, makes the car more responsive, improves in-corner steering.

OUTER position: More Ackermann, makes the car easier to drive, improves cornering speed.

The steering arm has two position for servo linkage mounting.

Always use this position.

INITIAL SETTING

INITIAL SETTING

INITIAL SETTING
ALUMINUM SERVO HORNS:
For more in-corner steering and better steering response, an aluminum servo horn may be used. In this situation, the steering servo saver is NOT used.

IMPORTANT!
Using an “Aluminum Servo Horns” increases the risk of servo breakage in serious crashes.
5. FINAL ASSEMBLY

ALTERNATIVE 1
STANDARD SERVO MOUNTING
(INITIAL SETTING)

Standard servo mounting provides less chassis flex, increased steering response, more high-speed steering.

ALTERNATIVE 2
FLOATING SERVO MOUNTING

Floating servo mounting provides more chassis flex, easier to drive, super easy through curbs.
5. FINAL ASSEMBLY

STEERING LINKS

LEFT

RIGHT THREAD

LEFT THREAD

1:1

57.5 mm

RIGHT

LEFT THREAD

1:1

RIGHT THREAD

57.5 mm

NOTE ORIENTATION
5. FINAL ASSEMBLY

SERVO LINK

Adjust servo link to fit your servo

NOTE ORIENTATION

RIGHT THREAD

LEFT THREAD

63mm

Adjust servo link to fit your servo
5. FINAL ASSEMBLY

Adjust the gear mesh so there is appropriate space between the spur gear and pinion teeth. There should be a very small amount of freeplay.

Motor (NOT INCLUDED)

Pinion with set-screw (NOT INCLUDED)

50T / 64P OPTION
#305990
40T / 64P OPTION
#305991
41T / 64P OPTION
#305992
42T / 64P OPTION
#305994
44T / 64P OPTION
#305996
46T / 64P OPTION
#305997
47T / 64P OPTION
#305998
48T / 64P OPTION
#306000

Pinion Gears Alu Hardcoated

#305968 18T / 64P OPTION
#305969 19T / 64P OPTION
#305970 20T / 64P OPTION
#305971 21T / 64P OPTION
#305972 22T / 64P OPTION
#305973 23T / 64P OPTION
#305974 24T / 64P OPTION
#305975 25T / 64P OPTION
#305976 26T / 64P OPTION
#305977 27T / 64P OPTION
#305978 28T / 64P OPTION
#305979 29T / 64P OPTION
#305980 30T / 64P OPTION
#305982 32T / 64P OPTION
#305983 33T / 64P OPTION
#305984 34T / 64P OPTION
#305985 35T / 64P OPTION
#305986 36T / 64P OPTION
#305987 37T / 64P OPTION
#305988 38T / 64P OPTION
#305989 40T / 64P OPTION
#305990 40T / 64P OPTION
#305991 41T / 64P OPTION
#305992 42T / 64P OPTION
#305994 44T / 64P OPTION
#305996 46T / 64P OPTION
#305997 47T / 64P OPTION
#305998 48T / 64P OPTION
#306000 50T / 64P OPTION

Adjust the gear mesh so there is appropriate space between the spur gear and pinion teeth. There should be a very small amount of freeplay.
These positions adjust the HEIGHT of the rear wing.

**HIGHER** wing: more rear traction, more stability
**LOWER** wing: higher top speed, improved steering response

WING POSITION

1. **LOW DOWNFORCE**: generates more steering but makes the car slightly more difficult to drive as the car is less stable. Recommended for large tracks with long sweepers.

2. **MIDDLE**: the compromise between high and low downforce (INITIAL SETTING).

3. **HIGH DOWNFORCE**: makes the car stable and easier to drive with less initial steering.
5. FINAL ASSEMBLY

- **SH M3x10**
- **SH M3x8**
- **SHIM 3x6x2**
- **Receiver wire**
- **Speed controller (NOT INCLUDED)**
- **Double-sided tape (NOT INCLUDED)**

*Double-sided tape (NOT INCLUDED)*
5. FINAL ASSEMBLY

LiPo BATTERY CONFIGURATION 1
CROSS-CHASSIS ALIGNMENT
(INITIAL SETTING)

Cross-chassis alignment makes the car easier to drive, and decreases traction rolling. Recommended for high-traction carpet tracks.

Battery Pack (NOT INCLUDED)
The battery pack must be angled to install or remove.

Fibre tape (HUDY #107870) (NOT INCLUDED)

LiPo BATTERY CONFIGURATION 2
INLINE BATTERY ALIGNMENT

Inline battery alignment improves the roll of the car and gives improved steering. Recommended for asphalt and low-medium traction carpet tracks.

Battery Pack (NOT INCLUDED)

Fibre tape (HUDY #107870) (NOT INCLUDED)
5. FINAL ASSEMBLY

1. Before cutting and making holes on the body, put the unpainted body on the chassis to confirm the mounting position and location for holes and cutouts. Before cutting and making holes on the spoiler, put the unpainted spoiler on the front bumper to confirm the mounting position and location for holes and cutouts.

2. Before painting, wash the inside of the body with mild detergent, and then rinse and dry thoroughly.

3. Mask the helmet shield if you wish.

4. Apply paint masks as appropriate.

5. Paint the body using paints formulated for polycarbonate bodies.

6. When the paint is dry, remove the masking.

7. Carefully cut out the body using appropriate scissors or cutting tools.

8. When you have finished cutting, peel off the external protective films.

9. Make sure that the wheel moves freely after nut tightening. If the wheel binds, loosen the nut slightly.

10. The shim allows to adjust the track-width of the front suspension. Use the same shims on both sides. Use 5x7x0.5mm shim for initial setting.

11. Check that the body reamer (HUDY #107600) is included.

12. The bearing oil (HUDY #106230) is included.
**RACE TRACK SET-UP SHEET**

**XRAY X1 2017 VER. 1.1**

### Front Ride Height
- **Shim**
- **Upper Arm Shim**
- **Side Spring**

### Mid Ride Height
- **Shim**
- **Spring**
- **Lower Arm Shim**

### Rear Ride Height
- **Shim**
- **Spring**
- **Upper Arm Shim**

### Comments

<table>
<thead>
<tr>
<th><strong>SERVO ARM</strong></th>
<th><strong>SERVER LINK SHIM</strong></th>
<th><strong>SHOCK ABSORBER</strong></th>
<th><strong>SHIM</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>FLoating</td>
<td>Standard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Track
- **Track Surface**
  - Carpet
  - Asphalt
- **Track Layout**
  - Technical
  - Mixed
  - Fast
- **Traction**
  - Low
  - Medium
  - High

### Center Shock Absorber
- **Shock Type**
  - Spring
- **Oil**
- **Rebound %**
- **Piston Holes Diameter**
  - 3.1mm
  - Custom holes
- **Foam Insert**
  - Yes
  - No

### Anti-Roll Bar
- **Thickness/mm**
- **Side Tubes**
- **Side Shock**

### Front Tires
- **Additive**
- **Additive Timing**

### Diff Setting
- **Loose**
- **Medium**
- **Tight**

### Gearing
- **Pinion mm**
- **Spur Gear mm**
- **Final Drive Ratio**

### Electronics
- **Motor**
- **Speedo**
- **Batteries**

### Body

### Comments