INTRODUCTION

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

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

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. 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 warranty 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 seriously 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 starting 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 in 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 places 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.
We do reserve all rights to change any specification without prior notice. 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.
**SYMBOLS USED**

- Part bags used
- Assemble in the specified order
- Assemble left and right sides the same way
- Pay attention here
- Assemble as many times as specified (here twice)
- Cut off remaining material
- Apply CA glue
- Detail view
- Apply oil
- Apply grease
- Use pliers
- Ensure smooth non-binding movement
- Tighten screw gently
- Correct
- Wrong
- Overtightened
- The threads are stripped
- Assembly view

**TOOLS REQUIRED**

**HUDY TOOLS:**
- Allen: 1.5mm
- Allen: 2.0mm
- Allen: 2.5mm
- Allen: 3.0mm
- Phillips: 3.0mm
- Socket: 7.0mm
- Reamer (HUDY #107600) or (HUDY #107601)

- Scissors (HUDY #188990)
- Combination Pliers (HUDY #189020)
- Side Cutters (HUDY #189010)
- Pocket Hobby Knife (HUDY #188981)
- Turnbuckle Wrench 4mm (HUDY #181040)
- RC Professional Multi Tool (HUDY #183011)

**EQUIPMENT INCLUDED**

- HUDY Premium Silicone Oils
  - Oil 600cSt (#106360)
  - Oil 10 000cSt (#106510)
- Diff Grease (HUDY #106211)

**NOT INCLUDED**

- SAMPLE OF OPTIONAL PARTS
  - #37XXX OPTION 1
  - #37XXX OPTION 2
  - #37XXX OPTION 3
- 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.

**EQUIPMENT REQUIRED**

- Transmitter
- Receiver
- Steering Servo
- Electric Motor
- Pinion Gear and set-screw
- Bearing Oil (HUDY #106230)
- Speed Controller
- LiPo Battery
- Lexan™ Paint
- Battery Charger
- Fibre Tape (HUDY #107870) Double-sided Tape (HUDY #107875)
- Wheels & Tires & Inserts (HUDY #803070 & #803080)
To protect and seal edges of graphite parts, sand edges smooth and then apply CA glue.

Make it: this for chassis edges and countersunk holes.

**Fine sandpaper**

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

**IMPORTANT**

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

- FRONT SUSPENSION BAG
- FRONT SUSPENSION OPTIONS
  - FRONT COIL SPRINGS
  - ANTI-ROLL BARS
  - ALU CASTER BUSHINGS
  - ALU NUTS M3
  - 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 PIWOT BALL 4.9mm (2)
  - CHASSIS - 2.5mm GRAPHITE - HARD
  - X1 ARM MOUNT PLATE - HARD TRACK WIDTH - 2.5mm
  - X1 GRAPHITE ARM BRACE 2.5mm
  - X1 GRAPHITE LOWER SUSPENSION ARM 2.5mm
  - X1 GRAPHITE UNIVERSAL 6.0mm (2)
  - X1 FRONT WHEEL AXLE - HUDY SPRING STEEL™ (2)
  - X1 19mm GRAPHITE TOP DECK 2.5mm
  - X1 18 ALU SERVO MOUNT - ORANGE
  - ALU MOUNT 26.5mm - ORANGE (2)
  - COMPOSITE PIVOTBAIL UNIVERSAL 6.0mm - SHORT (2)
  - COMPOSITE PIVOTBALL UNIVERSAL 6.0mm - HARD (2)
  - COMPOSITE PIVOTBALL UNIVERSAL 6.0mm - ALU FLEX - V3
  - COMPOSITE PIVOTBALL UNIVERSAL 6.0mm - V3
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

**ALTERNATIVE 1**

**STANDARD TRACK-WIDTH**  
*INITIAL SETTING*

Standard track-width setting is used for standard F1 front tires such as HUDY, RIDE, HOT RACE.

To make sure that you use the correct setting, measure the track-width with the tires; the track-width must be maximum 190mm.

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.

- #371017 CHASSIS - 2.0mm ALU FLEX - V3
- #371016 CHASSIS - 2.0mm ALU - V3
- #371019 CHASSIS - 2.5mm GRAPHITE - HARD

**2.5mm CHASSIS HARD**  
For low-traction conditions, as it improves overall traction.

ALU CHASSIS

Makes the car easier to drive and more stable in high-traction conditions or with tires that generate oversteering problems.

**ALTERNATIVE 2**

**WIDE TRACK-WIDTH**

Wide track-width setting is used for the narrow F1 front tires such as Valante.

To make sure that you use the correct setting, measure the track-width with the tires; the track-width must be maximum 190mm.

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.

- #372087 X1 GRAPHITE FRONT ARM BRACE 2.5mm
  - The brace makes the car easier to drive. Recommended for high-traction conditions.
1. FRONT SUSPENSION

ALTERNATIVE 1

STANDARD TRACK-WIDTH
(INITIAL SETTING)

IMPORTANT!
Use this standard track-width arm mount plate only with combination with standard track-width setting of the graphite lower suspension arm.

ALTERNATIVE 2

WIDE TRACK-WIDTH

IMPORTANT!
Use this wide track-width arm mount plate only with combination with wide track-width setting of the graphite lower suspension arm.

ALTERNATIVE 1
LONG SHOCK (FORWARD MOUNT POSITION)
For the LONG shock alternative, mount the shock holder on the top deck.

ALTERNATIVE 2
SHORT SHOCK (REARWARD MOUNT POSITION)
For the SHORT shock alternative, without the adaptor, mount the shock holder on the graphite plate for mounts (page 17/ step 2)
1. FRONT SUSPENSION

**ALTERNATIVE 1**

**STANDARD TRACK-WIDTH**

(INITIAL SETTING)

**ALTERNATIVE 2**

**WIDE TRACK-WIDTH**

**NOTE ORIENTATION**

**ECCENTRIC BUSHINGS**

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!**

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

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

**IMPORTANT!**

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

- 1.0° CAMBER
- 1.5° CAMBER
- 2.0° CAMBER
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- 3° CASTER
- 6° CASTER
- 9° CASTER
- 12° CASTER

**IMPORTANT!**

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

These eccentric bushings adjust the front CAMBER:

- 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 CAMBER BUSHINGS**

| #372325 | CAMBER 1.5°, 2.0° (2) | ALU OPTION |
| #372326 | CAMBER 1.0°, 2.5° (2) | ALU OPTION |

**ALU CASTER BUSHINGS**

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

Use LESS camber angle for carpet and other high-traction tracks. Use MORE camber on asphalt and low-traction tracks.
1. FRONT SUSPENSION

When the anti-roll bar is set, verify that both sides move at the same time. If they do, the bar is set up correctly. If not, adjust the wire so that it is flat.

Set the bar into the center, remove the play in the bushings, and tighten the set-screws fully.

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

DETAIL

Set the bar into the center, remove the play in the bushings, and tighten the set-screws fully.

BEARING OIL (HUDY #106230)

BEARING OIL (HUDY #106230)

ANTI-ROLL BARS

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#372491</td>
<td>1.1mm option</td>
</tr>
<tr>
<td>#372492</td>
<td>1.2mm included</td>
</tr>
<tr>
<td>#372493</td>
<td>1.3mm option</td>
</tr>
<tr>
<td>#372494</td>
<td>1.4mm option</td>
</tr>
</tbody>
</table>

BEARING OIL (HUDY #106230)

BEARING OIL (HUDY #106230)

901303 SB M3x3

930407 BB 4x7x2.5

OIL BEARING OIL (HUDY #106230)

OIL BEARING OIL (HUDY #106230)

ANTI-ROLL BARS

#372491 1.1mm option
#372492 1.2mm included
#372493 1.3mm option
#372494 1.4mm option
After assembling the steering block, do the following:

1. Loosen the set-screw slightly.
2. Use your thumb to press down on the top of the kingpin, while using your other fingers to pull up the steering block.
3. Tighten the set-screw.

There are THREE Ackermann positions on the steering block:

1. INITIAL SETTING
2. TIGHTEN GENTLY
3. FREE MOVEMENT

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

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

<table>
<thead>
<tr>
<th>FRONT COIL SPRINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>#372176 C=1.5 GOLD OPTION</td>
</tr>
<tr>
<td>#372177 C=2.0 SILVER INCLUDED</td>
</tr>
<tr>
<td>#372178 C=2.5 BLACK OPTION</td>
</tr>
<tr>
<td>#372179 C=3.0 GREY OPTION</td>
</tr>
<tr>
<td>#372180 C=3.5 GOLD OPTION</td>
</tr>
<tr>
<td>#372181 C=4.0 SILVER OPTION</td>
</tr>
<tr>
<td>#372182 C=5.0 BLACK OPTION</td>
</tr>
<tr>
<td>#372183 C=5.5 GREY OPTION</td>
</tr>
</tbody>
</table>

After assembling the steering block, do the following:

1. Loosen the set-screw slightly.
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There are THREE Ackermann positions on the steering block:

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2. TIGHTEN GENTLY
3. FREE MOVEMENT

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HIGH traction & flat track: 30K cSt (#106530 HUDY)

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

SIDE SPRINGS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>#371148</td>
<td>X1 REAR POD UPPER PLATE - 2.5mm GRAPHITE</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>#371149</td>
<td>X1 GRAPHITE 2.0mm REAR POD LOWER PLATE</td>
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ALU NUTS M3

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#296530-B</td>
<td>ALU BLUE OPTION</td>
</tr>
<tr>
<td>#296530-K</td>
<td>ALU BLACK OPTION</td>
</tr>
<tr>
<td>#296530-O</td>
<td>ALU ORANGE OPTION</td>
</tr>
<tr>
<td>#960030</td>
<td>STEEL SILVER INCLUDED</td>
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<tr>
<td>#960031</td>
<td>ALU SILVER OPTION</td>
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<table>
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<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>#301351-O</td>
<td>ALU ADJUSTABLE BODY POST STOP (2)</td>
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<table>
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<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>371147</td>
<td>X1 ALU 2.0mm REAR POD LOWER PLATE</td>
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<tr>
<td>373015</td>
<td>X1 GRAPHITE 2.0mm REAR POD LOWER PLATE</td>
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<th>Part Number</th>
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<tr>
<td>371182</td>
<td>COMPOSITE POD LINK (2)</td>
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<tr>
<td>37120</td>
<td>COMPOSITE BODY POST (2)</td>
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<tr>
<td>372560</td>
<td>BALL-END 4.2mm - THREADED - HUDY STEEL™ (2)</td>
</tr>
<tr>
<td>372662</td>
<td>COMPOSITE BALL-JOINT 4.2mm (4)</td>
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<tr>
<td>373015</td>
<td>X1 GRAPHITE 2.0mm REAR POD LOWER PLATE</td>
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<tr>
<td>373019</td>
<td>COMPOSITE POD LINK (2)</td>
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<tr>
<td>373020</td>
<td>ALU MOUNT 26.5mm - ORANGE (2)</td>
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<tr>
<td>373044</td>
<td>X1 SIDE LINKAGE TUBE (2)</td>
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<tr>
<td>373053</td>
<td>COMPOSITE LINKAGE SHAFT (2)</td>
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<tr>
<td>373054</td>
<td>X1 REAR POD UPPER PLATE - 2.5mm GRAPHITE</td>
</tr>
<tr>
<td>#373548</td>
<td>SIDE SPRING C=0.6 SILVER OPTION</td>
</tr>
<tr>
<td>#373585</td>
<td>SIDE SPRING C=0.9 GOLD OPTION</td>
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<tr>
<td>#373586</td>
<td>COMPOSITE SIDE SPRING HOLDER (2)</td>
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<tr>
<td>#373587</td>
<td>ALU MOUNT 26.5mm - ORANGE (2)</td>
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<tr>
<td>#373588</td>
<td>X1 SIDE LINKAGE TUBE (2)</td>
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<tr>
<td>#373589</td>
<td>COMPOSITE LINKAGE SHAFT (2)</td>
</tr>
<tr>
<td>#373591</td>
<td>X1 REAR POD UPPER PLATE - 2.5mm GRAPHITE</td>
</tr>
<tr>
<td>#373592</td>
<td>X1 GRAPHITE REAR POD LOWER PLATE</td>
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<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>373087</td>
<td>GRAPHITE BATTERY BACKSTOP 2.0mm</td>
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<tr>
<td>373094</td>
<td>LOWER &amp; UP PIennifer BRACE - LOW ROLL-CENTER - HARD - V3</td>
</tr>
<tr>
<td>373121-O</td>
<td>ALU STAND M3 6x6.4mm - ORANGE (4)</td>
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<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>373087</td>
<td>GRAPHITE UPPER &amp; PIennifer BRACE - LOW ROLL-CENTER - HARD - V3</td>
</tr>
<tr>
<td>373094</td>
<td>LOWER &amp; UP PIennifer BRACE - LOW ROLL-CENTER - HARD - V3</td>
</tr>
<tr>
<td>373121-O</td>
<td>ALU STAND M3 6x6.4mm - ORANGE (4)</td>
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<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>373121-O</td>
<td>ALU STAND M3 6x6.4mm - ORANGE (4)</td>
</tr>
</tbody>
</table>
2. FRONT SUSPENSION

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

DO NOT TIGHTEN FULLY

NOTE ORIENTATION

#371148
XT ALU 2.0mm REAR POD LOWER PLATE

#371149
XT GRAPHITE 2.0mm REAR POD LOWER PLATE

GRAPHITE PLATE is lighter weight, makes the car rotate faster.

ALUMINUM PLATE is heavier weight, makes the car more stable and easier to drive.

TIP

ALU NUTS M3

#960030 STEEL SILVER INCLUDED

#960031 ALU SILVER OPTION
Do not tighten fully, pivot balls must turn freely.

- OUTER POSITION
  (INITIAL SETTING)
  Straight link.
  Easier to drive.

- INNER POSITION
  Angled link.
  Increased in-corner steering.

Ensure free, smooth movement. If the pod plate does not move freely, loosen the nuts of composite pivot brace and tighten again.
2. REAR SUSPENSION

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

**SIDE SPRINGS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Rate (mm)</th>
<th>Option</th>
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<tbody>
<tr>
<td>#373584</td>
<td>0.6</td>
<td>SILVER</td>
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<tr>
<td>#373585</td>
<td>0.9</td>
<td>GOLD</td>
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<tr>
<td>#373586</td>
<td>1.2</td>
<td>BLACK</td>
</tr>
<tr>
<td>#373587</td>
<td>1.5</td>
<td>SILVER</td>
</tr>
<tr>
<td>#373588</td>
<td>1.8</td>
<td>GOLD</td>
</tr>
</tbody>
</table>

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.

For battery backstop adjustment check page 34 / step 1.
2. REAR SUSPENSION

ALTERNATIVE 2
SHORT SHOCK (REARWARD MOUNT POSITION)

For the SHORT shock alternative, without the adaptor, mount the shock holder on the graphite plate for body mounts.

ALU NUTS M3

#296530-B ALU BLUE OPTION
#296530-K ALU BLACK OPTION
#296530-O ALU ORANGE OPTION
#960030 STEEL SILVER INCLUDED
#960031 ALU SILVER OPTION

ALU ADJUSTABLE BODY POST STOP (2)

Very handy, easily externally-adjustable body post made from Swiss 7075 T6 aluminum. Allows for adjustment of body height by 3mm without needing to change the position on the body post.

NOTE ORIENTATION

Thread lock

6mm THREAD

3x12mm

3x6mm

3x6x3mm

Thread lock

NOTE ORIENTATION

ALTERNATIVE 2
SHORT SHOCK (REARWARD MOUNT POSITION)

From

ALU NUTS M3

#296530-B ALU BLUE OPTION
#296530-K ALU BLACK OPTION
#296530-O ALU ORANGE OPTION
#960030 STEEL SILVER INCLUDED
#960031 ALU SILVER OPTION

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ALU ADJUSTABLE BODY POST STOP (2)

Very handy, easily externally-adjustable body post made 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. 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.

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.

### Optional Side Shock

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

### Optional Parts

- **#378100** Side Shock Absorber - SET
- **#362650** Ball End 4.9mm with Thread 6mm (2)
- **#383123-0** Alu Shim 3x6x2.0mm - Orange (10)
- **#372651** Ball Universal 4.9mm - HUDY Spring Steel™ (2)
- **#902308** Hex Screw SH M3x8 (10)

### Oils

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<tr>
<th>#</th>
<th>Thickness</th>
<th>Included/Option</th>
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<tbody>
<tr>
<td>#106510</td>
<td>10 000cSt</td>
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</tr>
<tr>
<td>#106515</td>
<td>15 000cSt</td>
<td>OPTION</td>
</tr>
<tr>
<td>#106520</td>
<td>20 000cSt</td>
<td>OPTION</td>
</tr>
<tr>
<td>#106530</td>
<td>30 000cSt</td>
<td>OPTION</td>
</tr>
<tr>
<td>#106540</td>
<td>40 000cSt</td>
<td>OPTION</td>
</tr>
<tr>
<td>#106550</td>
<td>50 000cSt</td>
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**Note:**

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

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

### Tip

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.
3. BALL DIFFERENTIAL

**GRAPHITE REAR AXLE SHAFT**

- 9g lighter for great weight savings and improved acceleration, but more fragile.

**GRAPHITE REAR GEAR DIFF AXLE SHAFT**

**ALU NUTS M3**

- #296530-A ALU BLUE - OPTION
- #296530-X ALU BLACK - OPTION
- #296530-O ALU ORANGE - OPTION
- #960030 STEEL SILVER - INCLUDED
- #960031 ALU SILVER - OPTION

**BALL DIFF - SPUR GEARS**

- #375072 72T / 64P - OPTION
- #375075 75T / 64P - OPTION
- #375076 76T / 64P - OPTION
- #375078 78T / 64P - OPTION
- #375080 80T / 64P - OPTION
- #375086 96T / 64P - INCLUDED

**GEAR DIFF - SPUR GEARS**

- #375976 76T / 64P - OPTION
- #375978 80T / 64P - OPTION
- #375984 84T / 64P - OPTION
- #375988 88T / 64P - OPTION
- #375992 92T / 64P - OPTION

**ALU UPPER ECCENTRIC CLAMP**

**ALU UPPER CLAMP FOR BALL-BEARING**

**STEEL REAR AXLE SHAFT - HUDY SPRING STEEL™**

**STEEL REAR AXLE SHAFT - RUDY SPRING STEEL™**

**ALU REAR AXLE SHAFT - RIGHT**

**X1 ALU REAR WHEEL HUB - RIGHT**

**X1 ALU REAR WHEEL HUB - LEFT**

**SET OF ALU SHIMS 6.37x8.4mm (0.5mm, 1.0mm, 2.0mm) - ORANGE**

**COMPOSITE SPUR GEAR - 96T / 64P**

**COMPOSITE BALL - BEARING HUB (2)**

**ALU REAR WHEEL HUB - LEFT**

**ALU REAR WHEEL HUB - RIGHT**

**D-LOCK DIFF PLATE (2)**

**ALU DIFF HUB - ORANGE**

**COMPOSITE BALL - BEARING AXIAL F3-8 3x8x3.5 - V2**

**CARBIDE BALL - BEARING 3/8” x 1/4” x 1/8” FLANGED - STEEL SEALED - OIL (2)**

**CARBIDE BALL - BEARING 1/4” x 3/8” x 1/8” FLANGED - STEEL SEALED - OIL (2)**

**STEEL SILVER INCLUDED**

**STEEL SILVER OPTION**

**STEEL SILVER - ORANGE**

**STEEL SILVER - BLACK**

**STEEL SILVER - BLUE**

**STEEL SILVER - ALU ORANGE**

**STEEL SILVER - ALU BLACK**

**STEEL SILVER - ALU BLUE**

**STEEL SILVER - ALU SILVER**

**STEEL SILVER - ALU NUTS M3**

**STEEL SILVER - ALU HEX SCREW M3x8 (6)**

**STEEL SILVER - ALU HEX SCREW SB M3x4 (10)**

**STEEL SILVER - ALU HEX SCREW SOCKET HEAD CAP M2.5x8 (10)**

**STEEL SILVER - ALU CARBIDE BALL 3.175mm (12)**

**STEEL SILVER - ALU CARBIDE BALL BEARING AXIAL F3-8 3x8x3.5 - V2**

**STEEL SILVER - ALU BALL-BEARING 1/4” x 3/8” x 1/8” FLANGED - STEEL SEALED - OIL (2)**

**STEEL SILVER - ALU NUT M3 (10)**

**STEEL SILVER - ALU CONE WASHER ST 3x8x0.5 (10)**

**STEEL SILVER - ALU PIN 2x14 (10)**
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.

**IMPORTANT**

#374901
XRAY GEAR DIFFERENTIAL 1/10 FORMULA - SET

9g lighter for great weight savings and improved acceleration, but more fragile.

Use additional shims to widen the rear track-width. Use the same shims on both sides. For initial assembly use 6.4x8.4x1mm shims.

The thickness of these shims affects rear ride height, so determine the proper amount of shimming based on tire diameter.

**IMPORTANT:** Always use the same thickness of shims on both left & right sides.

For **INITIAL SETTING**, use (2x) 3x5x0.5mm on both left & right sides. Optionally included: (4x) 3x5x0.25mm shims for fine tuning.

**A SHORTER** car rotates harder in slow corners and has improved forward traction.

**A LONGER** car is more free in high-speed corners and will feel more linear, especially during fast direction changes.

**NOTE ORIENTATION**

3. BALL DIFFERENTIAL

3x5x0.5mm

**OPTION**

#37042
ALU UPPER ECCENTRIC CLAMP

951438
BB 1/4"x3/8"x1/8"

908258
SCM M2.5x8

375014
GRAPHITE REAR DIFF AXLE SHAFT

375010
GRAPHITE REAR AXLE SHAFT

#374901
XRAY GEAR DIFFERENTIAL 1/10 FORMULA - SET

#375014
GRAPHITE REAR DIFF AXLE SHAFT

#375010
GRAPHITE REAR AXLE SHAFT

Wheelbase adjustment

Standard position (0mm)

Rearward position (+ 1mm)

Frontward position (-1mm)

**IMPORTANT**

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.
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.
4. CENTER SHOCK

ALU PROGRESSIVE SHOCK SYSTEM - SET (2)

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.

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<tr>
<td>308264</td>
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<td>308274</td>
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**#308039**

ALU PROGRESSIVE SHOCK SYSTEM - SET (2)

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.

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<td>BALL UNIVERSAL 5.8mm HEX (4)</td>
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<tr>
<td>308037</td>
<td>COMPOSITE PISTONS 4-HOLE 1.0-1.2mm, 3-HOLE 1.0-1.2mm</td>
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<tr>
<td>308042</td>
<td>ALU SHOCK ADJUSTABLE NUT - ORANGE (2)</td>
</tr>
<tr>
<td>308082</td>
<td>SHOCK ABSORBER MEMBRANE (4)</td>
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<tr>
<td>308092</td>
<td>SHOCK FOAM INSERTS (4)</td>
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<tr>
<td>308316</td>
<td>SHOCK BALL JOINT - OPEN (4)</td>
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<tr>
<td>308323</td>
<td>ALU XRAY SHOCK BODY (2)</td>
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<tr>
<td>308327</td>
<td>ALU CAP FOR XRAY SHOCK BODY - ORANGE</td>
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<tr>
<td>308333</td>
<td>COMPOSITE SHOCK PARTS FOR ALU SHOCKS</td>
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<td>308353</td>
<td>ALU SHOCK CAP-NUT WITH VENT HOLE - ORANGE (2)</td>
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<td>308274</td>
<td>XRAY SPRING-SET C = 2.3</td>
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<tr>
<td>308241</td>
<td>XI SHOCK SHAFT</td>
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<tr>
<td>308270</td>
<td>XI SHOCK SPRING COLLAR - ORANGE</td>
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<td>308280</td>
<td>XI SHOCK ADAPTER - ORANGE</td>
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<td>901303</td>
<td>HEX SCREW SB M3x3 (10)</td>
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<td>965023</td>
<td>E-CLIP 2.3 (10)</td>
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<tr>
<td>970130</td>
<td>O-RING 13 x 1.5 (10)</td>
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<td>972030</td>
<td>SILICONE O-RING 3 x 2 (10)</td>
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4. CENTER SHOCK

SHOCK PISTON ADJUSTMENT

3 HOLES
1.1 mm
1.2 mm
1.3 mm

4 HOLES
1.1 mm INITIAL SETTING
1.2 mm
1.3 mm

SHOCK OIL

NOTE ORIENTATION

CUTAWAY VIEW

Be careful not to cross-thread the collar on the shock body.

SHOCK OIL

3 HOLES
1.1 mm
1.2 mm
1.3 mm

4 HOLES
1.1 mm INITIAL SETTING
1.2 mm
1.3 mm

Be careful not to cross-thread the collar on the shock body.

SHOCK OIL

3 HOLES
1.1 mm
1.2 mm
1.3 mm

4 HOLES
1.1 mm INITIAL SETTING
1.2 mm
1.3 mm

Be careful not to cross-thread the collar on the shock body.

SHOCK OIL

3 HOLES
1.1 mm
1.2 mm
1.3 mm

4 HOLES
1.1 mm INITIAL SETTING
1.2 mm
1.3 mm

Be careful not to cross-thread the collar on the shock body.

SHOCK OIL

3 HOLES
1.1 mm
1.2 mm
1.3 mm

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1.1 mm INITIAL SETTING
1.2 mm
1.3 mm

Be careful not to cross-thread the collar on the shock body.

SHOCK OIL

3 HOLES
1.1 mm
1.2 mm
1.3 mm

4 HOLES
1.1 mm INITIAL SETTING
1.2 mm
1.3 mm

Be careful not to cross-thread the collar on the shock body.

SHOCK OIL

3 HOLES
1.1 mm
1.2 mm
1.3 mm

4 HOLES
1.1 mm INITIAL SETTING
1.2 mm
1.3 mm

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.

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 FILLING

SOFTER OIL
Recommended for bumpy and low-traction tracks, generates more traction.

HARDER OIL
Recommended for flat and high-traction tracks, improves steering response.

HUDY SHOCK OILS

#106310 100cSt
#106315 150cSt
#106320 200cSt
#106325 250cSt
#106330 300cSt
#106335 350cSt
#106340 400cSt
#106345 450cSt
#106350 500cSt
#106355 550cSt
#106360 600cSt
#106365 650cSt
#106370 700cSt
#106375 750cSt
#106380 800cSt
#106390 900cSt
#106410 1000cSt
#106420 2000cSt

SOFTER OIL
Recommended for bumpy and low-traction tracks, generates more traction.

HARDER OIL
Recommended for flat and high-traction tracks, improves steering response.

After you insert the membrane, ensure that it is fully seated inside the alu cap.

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

1. Release the shock cap by 2-3 turns.
2. Push the shock shaft fully up. For the first time the extra oil will release through the hole in the alu cap-nut.
3. 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.

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 steps 1 to 3 until the shock shaft will push out 75% of its length
- 50% rebound - repeat steps 1 to 3 until the shock shaft will push out 50% of its length
- 25% rebound - repeat steps 1 to 3 until the shock shaft will push out 25% of its length
- 0% rebound - repeat steps 1 to 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.

ALTERNATIVE 1 - LONG SHOCK
Shock is built WITH adaptor.
Front mount is on graphite servo holder.
Improved driveability over bumps, improves on-power traction.

ALTERNATIVE 2 - SHORT SHOCK
Shock is built WITHOUT adaptor.
Front mount is on graphite plate for mounts.
Improved steering response, quicker direction changes.
NOTE ORIENTATION (Shiny finish side)

Install the balls with Professional Multi Tool (HUDY #183011)

NOTE ORIENTATION (Shiny finish side)

TIP

NOTE ORIENTATION

ALTERNATIVE 1 - SHORT SHOCK

ALTERNATIVE 2 - LONG SHOCK

DOWNSTOP ADJUSTMENT

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.

63mm

113mm

4. CENTER SHOCK
5. FINAL ASSEMBLY

- **Pinion Gear Hardcoated 18-50T/64P**
- **Alu Adjustable Servo Saver Set**
- **Alu Adjustable Front Aero Wing - ETS Approved**
- **Alu Adjustable Front Wing - Black - ETS Approved**
- **Alu Adjustable Front Wing - White - ETS Approved**
- **Alu Body Post Plate**

**LiPo Battery Backstop (2)**

**O-Ring for 1/8 on-Road Set-Up Wheel (4)**

**Hex Screw SH M2x5 (10)**

**Hex Screw SH M3x6 (10)**

**Hex Screw SH M3x10 (10)**

**Hex Screw SHF M3x3 (10)**

**Hex Screw SHF M4x12 (10)**

**Hex Phillips FH 2.2x6 (10)**

**Ball Bearing 5x6x2.5 Rubber Sealed - Oil (2)**

**Ball Bearing 5x10x4 Rubber Sealed - Oil (2)**

**Nut M4 (10)**

**Pin 2x10 (10)**
These shims adjust the bumpsteer. When thicker shims are used here, in-corner steering increases, but the car becomes more difficult to drive.

There are two Ackermann positions on the steering arm.

**INNER position**: More Ackermann, makes the car easier to drive, improves cornering speed (INITIAL SETTING).

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

The steering arm has two positions for servo linkage mounting. Always use this position (INITIAL SETTING).

**BEARING OIL**: HUDY #106230

**BEARING OIL**: HUDY #106230

**INITIAL SETTING**

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Options:

- #372541 ALU ADJUSTABLE SERVO SAVER SET

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**NOTE ORIENTATION**

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**FINAL ASSEMBLY**

**OIL**

**OIL**

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**BEARING OIL**: HUDY #106230

**BEARING OIL**: HUDY #106230

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**NOTE ORIENTATION**

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**INITIAL SETTING**

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**3x6x4mm**

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**5. FINAL ASSEMBLY**

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**#372541 ALU ADJUSTABLE SERVO SAVER SET**

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**NOTE ORIENTATION**

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**INITIAL SETTING**

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**BEARING OIL**: HUDY #106230

**BEARING OIL**: HUDY #106230

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**NOTE ORIENTATION**

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**INITIAL SETTING**

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**INITIAL SETTING**

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**NOTE ORIENTATION**

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**INITIAL SETTING**

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**BEARING OIL**: HUDY #106230

**BEARING OIL**: HUDY #106230

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**NOTE ORIENTATION**

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**INITIAL SETTING**
5. FINAL ASSEMBLY

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!
When the aluminum horn is used, the steering servo saver is not used. This increases the risk of breaking the servo in serious crashes.

ALU SERVO HORNS - OFFSET
#293491 KO, Sanwa - 23T
#293492 Hitec - 24T
#293493 Futaba - 25T

CLAMP ALU SERVO HORNS - OFFSET
#293401 KO, Sanwa - 23T
#293402 Hitec - 24T
#293403 Futaba - 25T

HUDY ALU SERVO HORNS
#293501 KO, Sanwa - 23T
#293502 Hitec - 24T
#293503 Futaba - 25T

HUDY CLAMP ALU SERVO HORNS
#293407 KO, Sanwa - 23T
#293408 Hitec - 24T
#293409 Futaba - 25T

ALU SERVO HORNS - OFFSET
#293491 KO, Sanwa - 23T
#293492 Hitec - 24T
#293493 Futaba - 25T

CLAMP ALU SERVO HORNS - OFFSET
#293401 KO, Sanwa - 23T
#293402 Hitec - 24T
#293403 Futaba - 25T

HUDY ALU SERVO HORNS
#293501 KO, Sanwa - 23T
#293502 Hitec - 24T
#293503 Futaba - 25T

HUDY CLAMP ALU SERVO HORNS
#293407 KO, Sanwa - 23T
#293408 Hitec - 24T
#293409 Futaba - 25T

NOTE ORIENTATION

STEERING LINKS

RIGHT THREAD LEFT LEFT THREAD RIGHT THREAD

LEFT THREAD LEFT THREAD

57.5 mm

IMPORTANT!
When the aluminum horn is used, the steering servo saver is not used. This increases the risk of breaking the servo in serious crashes.
SERVO LINK

Adjust servo link to fit your servo

NOTE ORIENTATION

LEFT STEERING LINK

NOTE ORIENTATION

RIGHT STEERING LINK

NOTE ORIENTATION

LEFT THREAD

RIGHT THREAD

63mm

NOTE ORIENTATION

(Shiny finish side)

NOTE ORIENTATION

(Shiny finish side)
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 less stable and more difficult to drive. Recommended for large tracks with long sweepers.

2. **MIDDLE**
   - Compromise between high and low downforce (INITIAL SETTING).

3. **HIGH DOWNFORCE**
   - Higher stability, easier to drive with less initial steering.
5. FINAL ASSEMBLY

- 902310 SH M3x10
- 903308 SFH M3x8
- 306219 SHIM 3x6x2 mm

Double-sided Tape HUDY #107875 (NOT INCLUDED)

Speed Controller (NOT INCLUDED)

Receiver (NOT INCLUDED)

Receiver Wire

Receiver

(Not Included)
LiPo BATTERY CONFIGURATION 1
CROSS-CHASSIS ALIGNMENT
INITIAL ASSEMBLY
Easier to drive, decreases traction rolling. Recommended for high-traction carpet tracks.

Battery Pack (NOT INCLUDED)
The battery pack has to be angled when installing or removing it from the car.

NOTE ORIENTATION

REARWARD battery placement
(INITIAL SETTING)

FORWARD battery placement

LiPo BATTERY CONFIGURATION 2
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)
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 front wing, put the unpainted wing on the front bumper to confirm the mounting position and location for holes and cutouts.

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

Mask the helmet shield if you wish.

Apply paint masks as appropriate.

Paint the body using paints formulated for polycarbonate bodies.

When the paint is dry, remove the masking.

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

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

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 front wing, put the unpainted wing on the front bumper to confirm the mounting position and location for holes and cutouts.

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

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