

LUXURY RTR
XRAY M18
4WD SHAFT-DRIVE
1/18 MICRO CAR



XRAY

INSTRUCTION
MANUAL

BEFORE YOU START

Before running your M18, 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.

Make sure that you review this entire manual, and examine the car carefully. If for some reason you decide the M18 is not what you wanted, do not continue any further. Your hobby dealer cannot accept your M18 kit for return or exchange after it has been run.

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

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.

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

www.teamxray.com

SAFETY PRECAUTIONS

The M18 is a high-competition, high-quality, 1/18-scale micro car for persons age 16 and older. This is not a toy; it is a precision racing model. This model racing car is not intended for use by children without direct supervision of a responsible, knowledgeable adult. Contents of 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. This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm. Take enough 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 operations 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.
- 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 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.
- 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.
- 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, please 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 R/C 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.
 - In 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.
- 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.
- Regularly check the charger for potential hazards such as damage to the cable, plug, casing or other defects. Ensure that any damage is rectified before using the charger again.
- Do not allow the transmitter batteries to become low on charge, otherwise you risk losing control of the model.
- Do not allow any metal part to short circuit the receiver batteries or other electrical/electronic device on the model.

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 vehicles 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 nor 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.

INCLUDED IN THE KIT



XMC180 ELECTRONIC SPEED CONTROLLER WITH REVERSE

The XRAY XMC180 is an ESC (electronic speed controller) that has been specially designed for the M18 micro race car. Based on SMD technology, the result is a very small high-quality electronic device. The ESC features reverse, proportional throttle and braking, and battery elimination circuitry (BEC).

XMC180 Technical Data

Input Power: 4-6 cell battery NiMH or NiCD / 4.8V-7.2V
 Min. Resistance : 0.138 / 7.5V
 Max. Resistance : 0.206 / 6V
 Continuous Current : max. 3.6A
 Peak Current : max. 27A / 0.05 sec.
 PWM Frequency : 1900 Hz
 BEC : 5V / 0.5A
 Temperature Range : 0-40 °C / 32-72°F

Wire Lead Colors

Brown = ground 
 Red = power 
 Orange = signal 



VERY IMPORTANT!

The XMC180 ESC is designed for use only with the micro stock motor and 5-cell battery pack. DO NOT use this speed control for micro modified or super size motor, as this will damage the speed controller. DO NOT use this speed control for 6-cell and more battery packs as this will damage the speed controller.



MICRO STOCK MOTOR

The high-performance micro stock motor provides high performance and long life. The motor includes an integrated capacitor board so you do not need to solder any additional capacitors. The motor can be easily mounted on the original composite motor holder of the M18. This motor works with 4-5 cells (nominal voltage 4.8-6.0V).

XMS01 MICRO SERVO






The high-quality micro servo has been specially chosen for the M18 because of its high precision, long life and high quality.

XMS01 Technical Data

Speed: 0.11 sec/60° transit
 Torque: 36 oz. in. / 2.6kg.cm
 Size: 30 x 12 x 30 mm
 Weight: 16.6g (0.58oz)
 Output gear: Plastic

Wire Lead Colors

Black = ground 
 Red = power 
 Yellow = signal 

MICRO BATTERY PACK



The 5-cell inline micro battery pack is designed to perfectly fit the M18. The high-capacity NiMH 2/3A cells provide low resistance and long life, giving excellent performance and long run times.

Charging cable #389130 included.

XT1 TRANSMITTER



- AM pistol grip transmitter
- Ergonomically designed steering wheel
- Digital proportional precise control
- Servo reversing
- Steering and throttle trims
- Throttle ATV / Adjustable Travel Volume
- Dual rate steering
- Adjustable neutral position for throttle trigger
- LED battery level indicator
- Easy crystal access
- External charging jack for battery charging
- All SMT circuitry for dependability

Specifications

Frequency: 27MHz
 Modulation AM: Pulse Proportional Modulation (PPM)
 Transmitter batteries: AAx8 (UM-3x8)
 Current Drain: 200mA@12V
 Weight (w/o batteries): 394g

XR1 RECEIVER



This tiny 27MHz receiver has built-in BEC (Battery Eliminator Circuit). Interchangeable crystals in following range:

Channel	Frequency (MHz)	Flag Color
1	26.995	Brown
2	27.045	Red
3	27.095	Orange
4	27.145	Yellow
5	27.195	Green
6	27.255	Blue

Specifications

Frequency Band: 27MHz
 Channel: 2
 BEC: Yes
 Single Conversion: 455KHz
 Channel Spacing: 10KHz
 Dimensions: 37.7x25.6x15.3mm (length x width x height)
 Weight: 15g

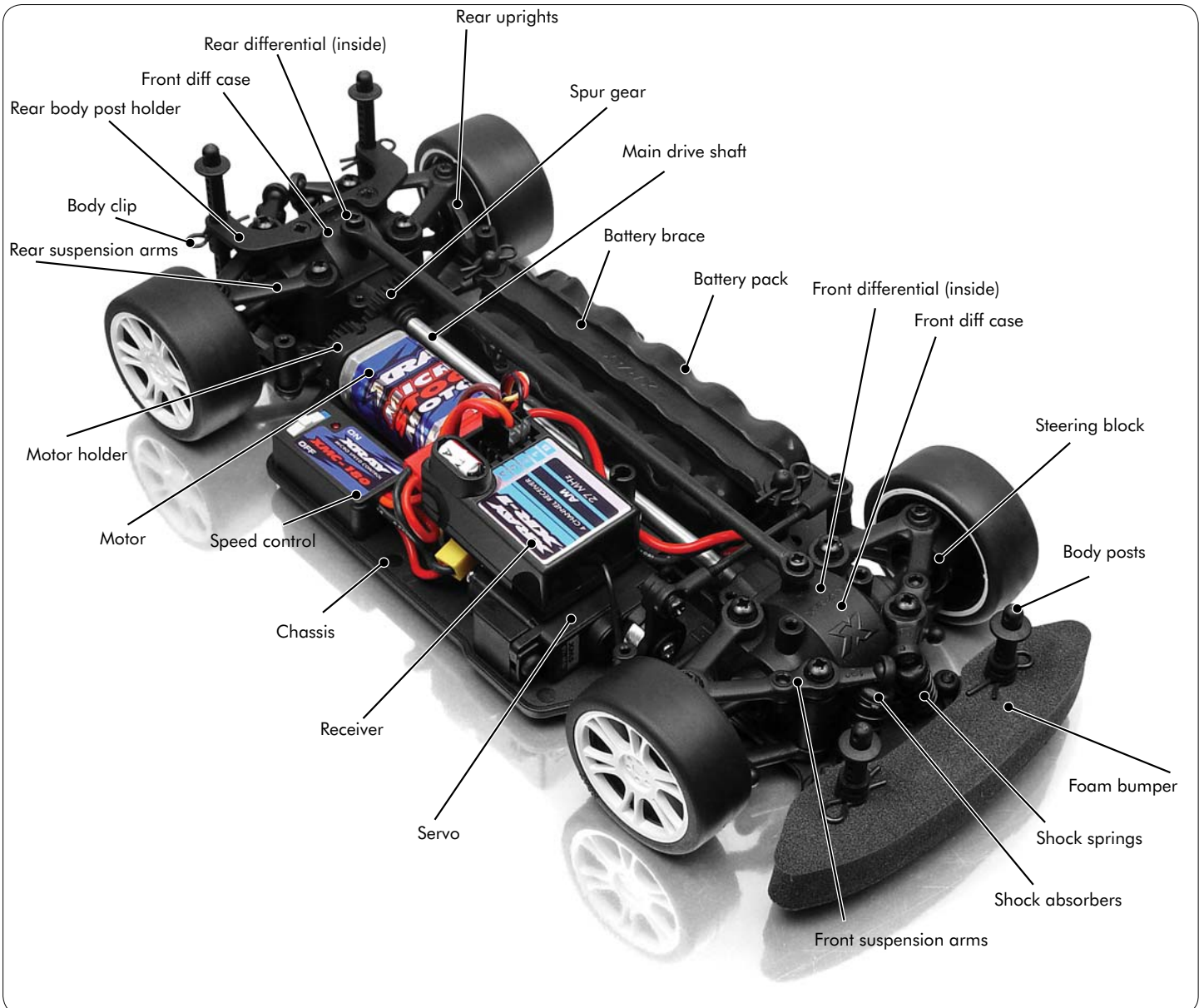
OTHER REQUIRED TOOLS & ACCESSORIES

You will need to purchase other items, available from your local hobby dealer, to operate and maintain your model.

- Thin, hobby-quality cyanoacrylate glue (CA glue)
- Safety glasses
- Hobby knife and/or scissors
- 8x AA alkaline batteries (for radio transmitter)
- NiMH battery charger
- HUDY Phillips screwdriver (for use with all screws on the M18)

M18 COMPONENTS

- Foam bumper – protects the front end of the car in the event of front collision
- Body posts – adjustable height posts support the body shell
- Body clip – small metal clips that go through the holes in the body posts, securing the body to the body posts
- Shock absorbers – coil-over shock absorbers provide smooth suspension movement when driving the car through corners and going over bumps
- Shock springs – wound metal coil springs provide damping for the suspension when going over bumpers or around corners
- Front suspension arms – molded composite front suspension arms provide smooth suspension movement and suspension rigidity
- Front diff case – molded composite case that encloses the front gear differential
- Front differential (inside) – molded composite gear differential allows the front wheels (inner and outer) to rotate at different speeds when turning a corner, just a like real car
- Steering block – molded composite steering blocks support the front wheels and driveshafts, allowing smooth wheel rotation and left/right steering
- Chassis – molded composite main chassis plate provides a solid base for the other car components to attach to
- Servo – high-quality XRAY servo provides smooth, fast steering control
- Receiver – high-quality XRAY radio receiver receives signals from transmitter and controls the attached motor speed controller and steering servo.
- Speed control – high-quality XRAY motor speed controller controls the operation of the motor
- Motor – high-quality XRAY micro stock motor provides power to the car's wheels through the transmission
- Motor holder – molded composite motor holder secures the motor to the chassis and allows fine gear-mesh adjustment
- Battery pack – high-quality XRAY battery pack contains 5 individual cells connected in series, providing 6.0V of power for your car
- Battery brace – molded composite battery brace secure the battery pack to the chassis
- Spur gear – molded composite spur gear, driven by the motor, drives the car's transmission
- Main drive shaft – machined aluminum main drive shaft connects the front and rear transmissions, providing full-time 4WD power
- Rear diff case – molded composite case that encloses the rear gear differential
- Rear differential (inside) – molded composite gear differential allows the rear wheels (inner and outer) to rotate at different speeds when turning a corner, just a like real car
- Rear uprights – molded composite uprights support the rear wheels and driveshafts, allowing smooth wheel rotation
- Rear body post holder – molded composite plate holds the rear body posts, allows height adjustment
- Rear suspension arms – molded composite rear suspension arms provide smooth suspension movement and rigidity



M18 QUICK START – EASY 10-STEP GUIDE

1. Preparing the car
2. Install the Transmitter Batteries
3. Charge/cycle the M18 Battery Pack
4. Install the M18 Battery Pack
5. Set up the Antenna
6. Turn on the Transmitter
7. Turn on the M18
8. Drive!
9. Turn off the M18
10. Turn off the Transmitter

PREPARING THE CAR

Decorating your M18

The M18 body was hand-painted with premium-quality, high-gloss paint and several stickers were applied to the body.

If you want to use the included rear wing, you must trim it first. Make two holes in the rear of the body as indicated. Attach the rear wing to the body using the included screws and plastic nuts.



INSTALLING THE TRANSMITTER BATTERIES

Your XT1 Transmitter uses eight AA batteries. The battery tray is located at the base of the transmitter.

1. Remove the battery cover (bottom of transmitter) and remove the battery tray.
2. Install eight (8) AA alkaline batteries into the battery holder. Pay close attention to the correct direction of the positive (+) and negative (-) ends of the batteries as marked in the tray.
3. Reinstall the battery tray using the molded pegs in the bottom as a guide, then replace the battery cover.
4. Turn on the transmitter and check that the LED power indicator gives a solid red light.



If the power indicator does not light up, the transmitter batteries may be weak, discharged, or possibly installed incorrectly. Check the battery positions first, then replace any weak batteries with new or freshly-charged batteries as required.

The power indicator light does not indicate the charge level of the main battery pack in the car.

Use only fresh alkaline or rechargeable batteries, all of the same brand. Make sure that rechargeable batteries are fully charged according to the manufacturer's instructions. If you use rechargeable batteries in your transmitter, be aware that when they begin to lose their charge, they lose power much more quickly than regular alkaline batteries.

TIP: Transmitter Battery Holder

Make sure that the contacts in the battery holder stay clean by using a pencil eraser to gently remove any corrosion or dirt that may accumulate on them. It is recommended to do this each time you install fresh cells into your transmitter.



CAUTION !

Stop running your M18 at the first sign of weak batteries to avoid losing control.

When the transmitter will not be used for any short or long period of time, always remove the batteries. If the batteries are loaded incorrectly, the transmitter may be damaged.

M18 BATTERY PACK INSTRUCTIONS

The M18 RTR comes with a 5-cell NiMH battery pack. Follow these instructions how to charge and install the battery pack.

Cycling - Extremely Important

Cycle the battery pack before using for the first time. When cycling the battery pack for the first time, carefully follow these instructions:

1. Set the charge current 110 mA (0.11A).
2. Charge the battery pack for 14-16 hours. During charging it may happen that the charger will stop charging while the battery pack is not fully charged. In such case you can continue charging until the battery pack is fully charged. This may happen one or more times during charging and this issue is related to the type of charger or type of charging used.
3. After 14-16 hours disconnect the battery pack, even if the charger is still charging it.
4. Let the battery pack rest for 1 day.
5. After 1 day discharge the battery pack. Set the discharger to a 1.1A discharge rate, and set the discharge cut-off voltage to 4.5V for the pack (0.9V per cell).
6. Let the battery pack rest for 6 hours.

Your battery pack has now been cycled and you can use it safely.



Rapid Charging

For rapid charging, set the charge current to 1.1 A, and use a high-quality peak-detection charger with automatic shut-off. Do not use higher current; if rapid charging is done at a higher current, the battery pack may generate too much heat and explode or vent. Never leave the battery pack unattended while it is charging. If the battery pack becomes too hot (113°F or higher), stop charging immediately.

Recommended Charger

We strongly recommend using a high-quality peak-detection charger with automatic shut-off. The charger should be specifically designed for charging rechargeable nickel metal hydride (NiMH) cells.

TIP: For charging use the included #389130 charging cable. Make sure to connect the red wire (+) to the positive (+) slot on the charger and connect the black wire (-) to the negative (-) slot on the charger.

Discharging and Storage

After use, we DO NOT RECOMMEND discharging the pack completely, as this will damage the pack. You can safely recharge the pack immediately after use without any performance degradation. If you will be storing the pack for longer than a month, partially discharge the pack down to approximately 40% capacity.

IMPORTANT Battery Pack Warnings

- Never disassemble the battery pack or peel away the cover.
- Keep the battery pack away from water.
- Do not touch the battery pack with wet hands or wet objects.
- Do not subject the battery pack to strong impacts and short circuits.
- Keep the battery pack away from fire and flammable objects.
- Disconnect the battery pack when it is not in use.
- Do not put metal objects in the battery pack connector or touch the terminals in the connector.
- Do not throw away the battery pack when you no longer need it. Bring it to the shop from which you bought it, or to a shop offering battery recycling service.
- If leaked battery alkaline electrolyte gets in your eyes or on your skin, flush thoroughly with clean water and consult with a doctor immediately.
- Regularly check the wiring for damage. While running the car, vibration or movement may cause damage to the wires which if left unchecked may result in a short circuit. If any wire insulations becomes damaged, please dispose of the battery pack properly and do not use it, nor try to repair it.
- You are responsible for the proper use of this battery pack and any damage that may occur due to its use or misuse. XRAY is not liable for any injury, damage, or harm caused to any person or property arising from the use or misuse of their products.

RECYCLE THE BATTERY PACK!



DO NOT DISPOSE OF IN FIRE!



Battery Pack Warranty

A new, unused battery pack is guaranteed against manufacturer's defects and workmanship. Any damage due to misuse by the user will be repaired at the user's expense. There is no warranty expressed or implied that covers damage caused by normal use, or covers or implies how long the battery pack will run (run time), or last before requiring replacement due to normal use and normal cell degradation. XRAY shall not be liable for any damage caused by overcharging, battery failure, improper charging or discharging, use of non-approved chargers, use of non-approved batteries, and alternations or modifications of any kind to the charger, batteries, switches, or wiring.

Battery Pack Note

When using the battery pack in the micro model cars, some of the battery packs may be slightly longer than others due to the way wiring is made on individual packs. This may lead to complications when inserting the battery pack on the chassis between the battery holding posts (which hold the battery strap). If this occurs, we recommend that you trim a small amount of material from the battery holding posts so the battery packs sits properly on the chassis without problem. We also recommend that you attach a small foam strip to bottom of the battery strap to remove any gap between the strap and the battery pack. This will help to keep the battery pack in place and prevent it from falling out.

INSTALLING THE M18 BATTERY PACK

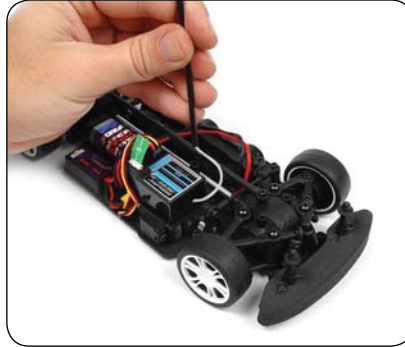
1. Place the battery pack on the chassis between the battery holder stands.
2. Please the battery holder on the top of the batteries and use the body clips to secure the battery holder to the stands.
3. Connect the battery plug to the red female plug on the ESC.



SETTING UP THE ANTENNA

You must install the antenna tube before operating your M18.

1. Locate the black antenna wire that exits the receiver. The receiver is mounted on the top of the servo.
2. Pull the wire straight with your fingers and then insert the end of the wire into one end of the antenna tube. Push the wire all the way through the antenna tube.
3. Pull the remaining wire through the antenna tube, and then insert the base of the antenna tube into the molded post on the chassis to which the servo is mounted.
4. Fold the remaining antenna wire over the top of the tube. The remaining wire can stick up.



TIP:

Spray a small amount of window cleaner on the antenna wire to make it easier to push through the antenna tube.

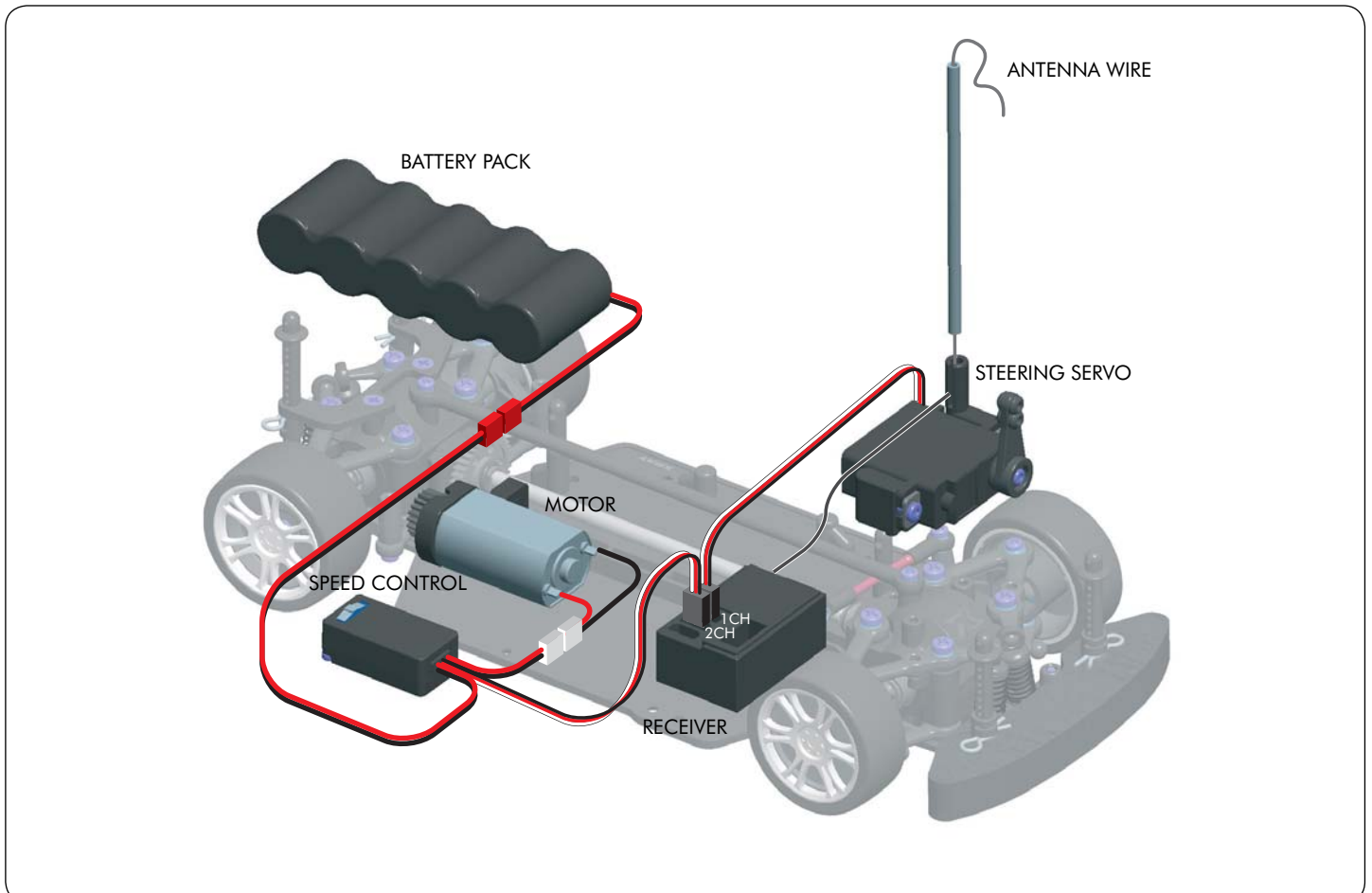
Do not push the transmitter antenna down from the top. Pull it down from the bottom, one segment at a time, to prevent binding and kinking the antenna mast.



CAUTION !!!

Do not shorten the length of the antenna wire. Its length is tuned to the frequency band; cutting it may severely shorten the radio system's range.

ELECTRONICS ASSEMBLY AND WIRING CONNECTION



XRAY RADIO SYSTEM**XT1 TRANSMITTER CONTROLS****Transmitter Antenna**

Transmits the radio signal from the transmitter. Always extend the transmitter antenna before you operate the transmitter; otherwise you risk create interference to another modeller.

Transmitter Crystal

Solid-state plug-in crystal allows you to change the frequency on which your transmitter broadcasts. The receiver must contain the matching frequency crystal.

Steering Trim

Adjusts the steering left/right in small increments so the model runs straight when the transmitter steering wheel is at rest (centered).

Throttle Trim

Adjusts the throttle neutral position up/down in small increments so the car does not move when the transmitter throttle trigger is at rest (neutral)

Throttle Trigger

Controls the forward/reverse movement of the car. Car moves forward when you pull the throttle trigger, and moves in reverse when you push the throttle trigger.

Steering Wheel

Controls the left/right steering of the car.

Power Switch

Turns the transmitter on or off.

Steering D/R (Dual Rate)

Adjusts the steering sensitivity.

External Charging Jack

Recharges the transmitter battery if you are using a rechargeable battery pack.

Steering Reverse

Changes the direction of the car's steering in relation to the way you turn the transmitter steering wheel. Always be sure the steering reverse is in the "R" position.

Throttle Reverse

Changes the car's forward/reverse direction in relation to the way you move the transmitter throttle trigger. Always be sure the throttle reverse is in the "R" position.

Battery Cover

Covers the transmitter battery compartment

Battery Indicator

LED indicates the transmitter battery voltage level. If the Red LED does not light up, please replace the transmitter batteries (8x AA batteries).

RADIO SYSTEM TERMINOLOGY

Take some time to familiarize yourself with these radio system terms that are used throughout this manual.

BEC (Battery Eliminator Circuitry)

BEC circuitry powers the receiver and steering servo from the main battery pack. This eliminates the need for using a separate receiver battery pack to power the radio equipment on the car.

Channel

The 27 MHz frequency band is divided into 6 channels so that up to 6 models can be operated simultaneously. Each channel is referred to by its flag color and channel number according to the following table.

Channel	Frequency (MHz)	Flag Color
1	26.995	Brown
2	27.045	Red
3	27.095	Orange
4	27.145	Yellow
5	27.195	Green
6	27.255	Blue

Clearing your Frequency

A routine, verbal check to make sure nobody else in your area is operating on the same channel. Always clear your frequency by calling out your channel number before operating your model. If the channel is already in use, wait until it is clear to use.

Crystal

The small, plug-in solid state in device that sets the operating frequency (channel) on which the radio system will operate. For each channel there are two crystals: one for the transmitter and one for the receiver. Each crystal should be marked with either Tx (transmitter) or Rx (receiver).

It is recommended that you use only authentic XRAY crystal sets, and to change both the transmitter and receiver crystal at the same time.

ESC (Electronic Speed Control)

The electronic device that controls the operation of the car's motor. An ESC provides precise, digital proportional throttle and braking control and uses power very efficiently so that car's battery pack lasts a long time and car runs longer. The ESC has circuitry that prevents loss of steering and throttle control as the batteries lose their charge.

Frequency Band

The radio frequency band used by the transmitter to send signals to your car. Your M18 radio system operates on the 27 MHz frequency band.

Neutral Position

The positions that the steering servo and ESC go to when the transmitter controls are at their neutral settings.

NiMH

Refers to rechargeable, nickel-metal hydride (NiMH) batteries.

Receiver

The radio receiver inside your car that receives signals from the transmitter and relays them to the steering servo and ESC.

Servo

Small electronic motor unit in your car that operates the steering mechanism.

Transmitter

The hand-held radio unit that sends throttle and steering signals to your car.

Trim

The fine-tuning adjustment for the neutral position of the steering servo and ESC, made by turning small knobs on the transmitter.

OPERATING THE M18

Now that everything is prepared for operating the M18, please follow these instructions.

Radio System Rules

- Each time you prepare to run your M18, you must clear your frequency to be sure no one else in the area is using the same channel as you.
- There are six possible channels, numbered #1 through #6. Each is represented by a color. Look at the crystal plugged into the back of your transmitter to determine which channel your M18 is assigned to.
- Always turn your M18 transmitter **on first** and **off last**. This will help to prevent your M18 from receiving stray signals from another transmitter or other source, and running out of control.
- Always have the transmitter turned on before you plug in the battery pack in the model (having the speed controller in ON position).
- Always use new or freshly charged batteries for the radio system. Weak batteries will limit the range of the radio signal between the receiver and the transmitter. Loss of the radio signal can cause you to lose control of your M18.

1. Turn on the Transmitter

Always turn on the transmitter first by sliding the power switch to the ON position. The red light should go on. If the red light does not go on, check for incorrectly installed batteries or weak batteries.



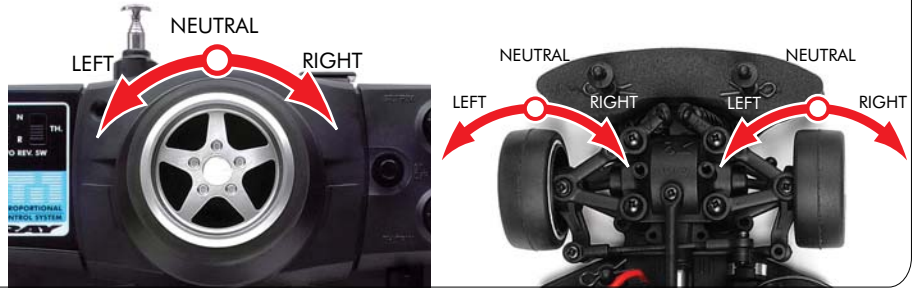
2. Turn on the M18

After the transmitter is on, turn the ESC power switch to the ON position. The electronics should activate. Check the radio range by walking away from the car.



3. Check the Steering Operation

Turn the transmitter steering wheel left then right to check if the front wheels move correctly. The amount of steering varies according to the steering wheel movement. If the steering wheel is turned all the way left or right, the front wheels will also steer all the way right or left.



4. Check the Driving Operation

Operate the throttle trigger to check if the car goes forward and backwards. Pull the trigger backward to make the car move forward; push the trigger forward to apply the brakes and make the car move backwards.

The amount of acceleration varies according to the throttle trigger movement. If the throttle trigger is pulled all the way back, the faster the car will run.



5. Adjust the Steering Trim (optional)

Use the steering trim knob on the transmitter to fine-tune the steering position if the car does not drive straight with the steering wheel in the neutral position (centered).



6. Steering Dual Rate

Steering Dual Rate is used to adjust the amount of steering servo movement.



7. Adjust the Throttle Trim (optional)

Use the throttle trim knob on the transmitter to fine-tune the throttle neutral position if the car wheels are rotating with the throttle trigger in the neutral position.



8. When turning OFF vehicle

Turn off the car's ESC first. After the ESC is turned off, turn off the transmitter.

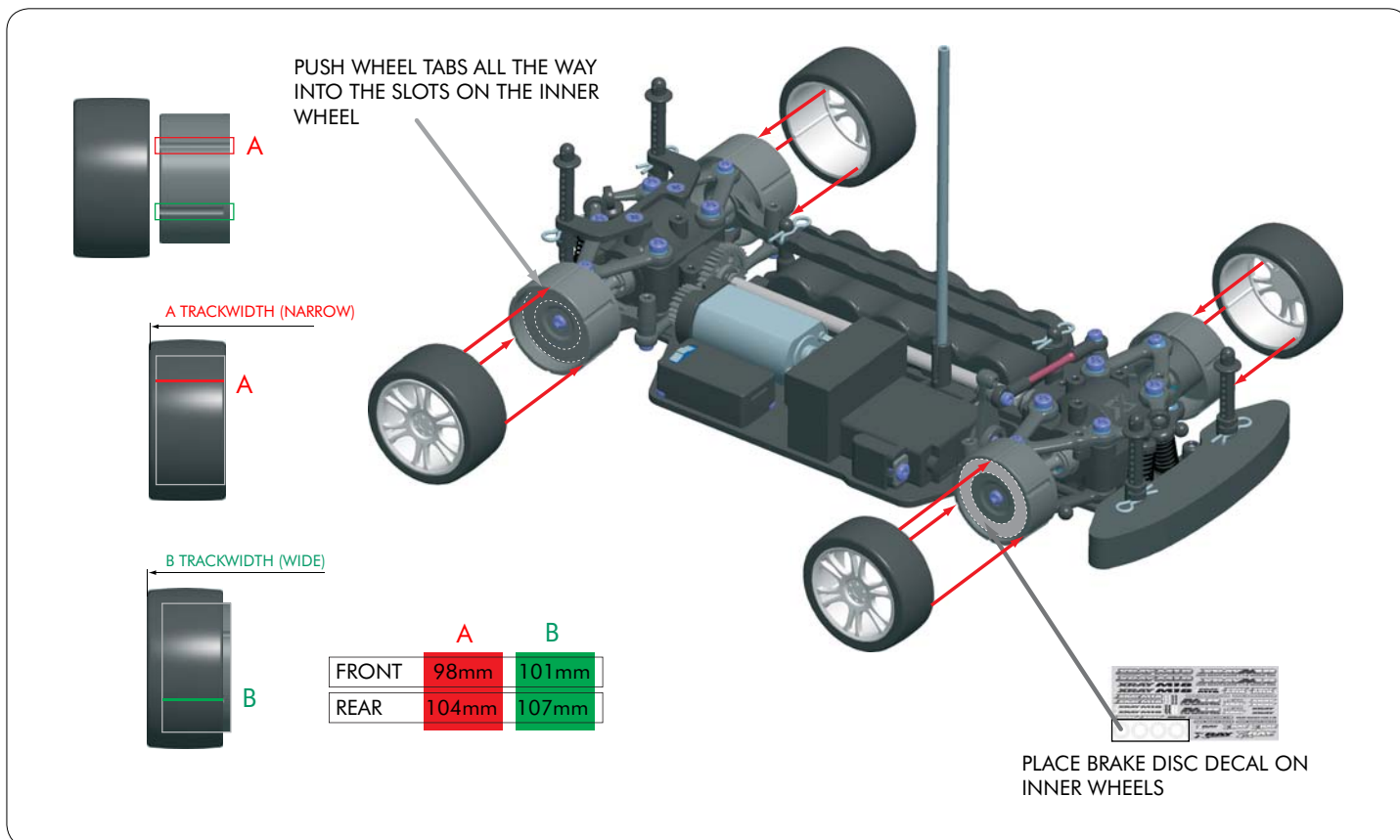


OTHER INSTRUCTIONS

Installing Wheels & Track-width Adjustment

If you remove the wheels from the car, reinstall the wheels by pushing the white outer wheels onto the black inner wheel adaptors. Push the outer white wheels until the tabs seat all the way on the inner wheel.

Each inner wheel adaptor has 3 short and 3 long slots to enable the track-width adjustment. The short slots give a wider track-width adjustment, while the long slots give a narrower track-width adjustment. When installing wheels at one end of the car (front or rear), make sure to install both left and right wheels using the same slots (short or long).

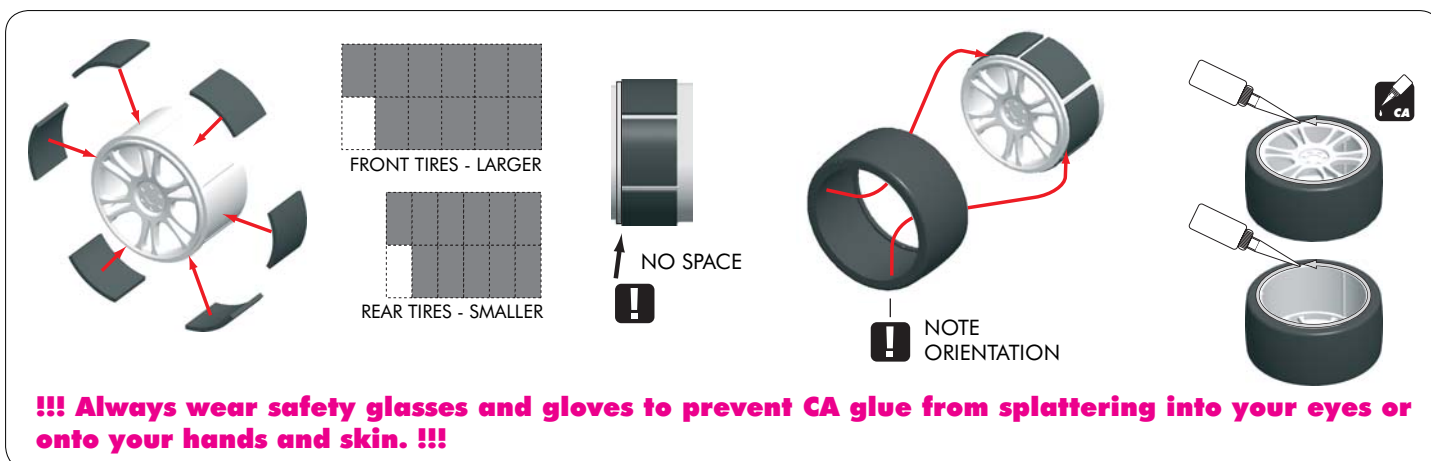


GLUING THE TIRES

The tires on your M18 are pre-glued and for the quick start you can skip this section.

If you will purchase a new set of tires, you must glue the tires on your M18 (using CA glue) to prevent the tires from spinning on the wheels. You can glue the tires with or without removing the wheels from the car.

1. To remove the wheel, gently squeeze (pinch) the tire/wheel while pulling off from the inner wheel adaptor.
2. Using your thumb, push the edge of the tire away from the wheel so there is a gap.
3. Place a one or two of CA glue into the gap and release the tire. Capillary action will draw the glue around the bead of the tire.
4. Apply CA glue to 5 or 6 spots around the wheel until the tire is completely glued to the wheel.
5. Turn the wheel over and repeat the process for the inside of the wheel/tire.
6. Repeat for the remaining wheels.



MAINTAINING YOUR THE M18

Your M18 is designed to be easy to work on, and should require very little maintenance to keep it at its peak performance.

Battery Maintenance

The M18's main battery pack is made of high-quality NiMH cells, and may be recharged up to 1000 times. We strongly recommend using a high-quality peak-detection charger that is suitable for use with NiMH batteries. Using an inferior-quality charger may result in damage to the battery pack and risk of injury or fire.

The transmitter uses eight AA cells. When the batteries get weak, replace them with high-quality alkaline batteries or rechargeable batteries.

Motor Maintenance

The XRAY micro stock motor is a high-performance, sealed, non-rebuildable motor. Keep the motor clean from debris by brushing it off or using compressed air. Do not attempt to open the motor; this will render the motor inoperable. Periodically put a drop of light oil in the bushing around the output shaft. Be careful not to overheat the motor or its performance may suffer.

Electronics Maintenance

The electronic components installed on the M18 should not require any maintenance. Use a soft brush to remove any dust or debris that may accumulate on or around the car's components. Do not use solvents to clean the electronics of the M18.

Tire Replacement

The stock rubber tires are designed for long life and high grip. Over time and a lot of usage you may notice the tires wearing in strange patterns. If this happens, we advise you to replace the tires with new ones. Glue a new set of tires to a new set of white rims, and install them in place of the old tires.

Bearing Maintenance

The M18 contains 16 high-speed, high-quality sealed ball-bearings. We recommend that you periodically clean the bearings (using motor cleaner) and apply a drop of light oil to ensure longevity and smoothness.

To clean and oil the bearings, you must disassemble the car and remove the bearings. Spray out the bearings using motor spray so all external and internal debris is removed. Then apply a drop of light oil to the inside of the bearing. Reinstall the bearings.

Body Maintenance

The tough Lexan® body on the M18 is designed to withstand the rigors of racing. Use a soft brush to remove dirt/dust after every run.

TUNING YOUR M18

Tuning your M18 can help to better the car's performance, durability, or looks.

XRAY offers high-performance option parts to enable you to fine-tune your M18 to achieve better results.



Tire Combinations

Changing the tires is a very easy way to tune the performance of your M18.

Rubber Tires

You can choose from a range of long-lasting XRAY rubber tires to enhance your M18's performance

Recommended tire combinations

Front tires	Rear tires	Effect
40	35	USE ON LOW GRIP TRACK, WHEN CAR IS OVERSTEERING, OR WHEN THE FRONT "DIVES."
40	40	Use when car and track are neutral (standard tire combination)
50	40	USE ON HIGH GRIP TRACK, WHEN CAR IS OVERSTEERING, OR WHEN THE FRONT "DIVES."

38 9635 - Rubber Tires + Inserts, Rear [35 Deg] (2) - available as option

38 9640 - Rubber Tires + Inserts, Front + Rear [40 Deg] (4) - included in the kit

38 9650 - Rubber Tires + Inserts, Front [50 Deg] (2) - available as option



Foam Tires

XRAY also offers high-grip mounted foam tires to give your M18 ultimate grip on the track.

#389531 - Rear Foam Tire Mounted [35 Deg] - Soft

#389533 - Rear Foam Tire Mounted [40 Deg] - Medium

#389534 - Front Foam Tire Mounted [45 Deg] - Medium

#389536 - Front Foam Tire Mounted [50 Deg] - Hard

Gearing

Gearing changes the acceleration and top speed of your M18 so that you can tune it to your type of track or to achieve the speeds or runtimes you desire.

You change your gearing by using different combinations of motor pinion and spur gears:

- # 38 5701 – Composite Pinion Set (13,14,15,16)
- # 38 5700 – Composite Pinion Set (17,19,21,23)
- # 38 5742 – Spur Gear 42T

Small pinion/large spur: Faster acceleration, lower top speed, less strain on motor - reduces chance of motor overheating, longer runtime

Large pinion/small spur: Slower acceleration, higher top speed, more strain on motor - increases chance of motor overheating, shorter runtime

INTERNAL RATIO 1:2.5	SPUR GEAR	PINION GEAR	FINAL RATIO	ACCELERATION ↑ ↓ SPEED	
	42		14		7.50
			15		7.00
			16		6.56
			17		6.18
	AVAILABLE OPTION		18		5.83
	36		16		5.62
			17		5.29
			18		5.00
			19		4.74
			21		4.29
	INCLUDED WITH KIT		23		3.91

Gear Mesh

When changing gears, be sure to set the gear mesh so it is not too tight or too loose. Refer to the XRAY M18 Instruction Manual for more information.



CHASSIS & SUSPENSION

There are several chassis and suspension components that you change to improve the performance, handling, and looks of your M18.

Graphite Chassis



Improves chassis stiffness and handling.

- # 38 1111 – Micro Graphite Chassis – Blue
- # 38 1112 – Micro Graphite Chassis – Silver
- # 38 1115 – Micro Graphite Chassis – Black
- # 38 1151 – Conversion Set for 300 Super Size Motor - Blue

Suspension Arms



Improves steering.

- # 38 2106 – Set of Suspension Arms 6° Caster (2)

Aluminum Suspension Blocks



Improves durability and stiffness, increases steering responsiveness.

- # 38 2252 – Alu Suspension Blocks – Left
- # 38 2262 – Alu Suspension Blocks – Right

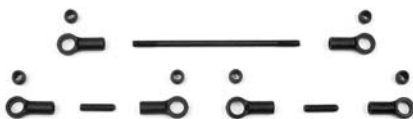
Pre-set Rear Toe Linkages



Increases top speed and efficiency, increases handling 'aggression.'

- # 38 3220 – Set of Rear Linkages 2.5° Toe-in (2)

Adjustable Linkages



Offers varying adjustment of front and rear toe.

- # 38 3300 – Adjustable Turnbuckle Set for Toe-in Adjustment



DRIVETRAIN

Aluminum Ball Differential



Adjustable ball differential may be used to adjust traction at either end of the car.

38 5001 – Alu Adj. Ball Differential – Hardcoated – Set

Front One-way Differential



Allows for quicker steering but decreases braking performance, since only the rear wheels will brake.

38 5101 – Front One-way Differential - Set - Blue

Aluminum Drive Shafts



Ultra-smooth, high-strength alum. driveshafts provide extra strength for use with high-performance motors.

38 5201 – Alu Drive Shaft – Set (2) – Blue



MOTORS & RELATED

Aluminum Motor Holder



Allows use of different types of micro motors, increases motor cooling (giving improved motor performance), adds strength to chassis.

38 2021 – Alu Motor Holder – Universal – Blue

Aluminum Motor Heatsink



Increases motor cooling (giving improved motor performance).

38 2040 – Alu Heatsink for Micro Stock Motor
38 2041 – Alu Heatsink for Super Size Motor

Super Size 300 Motor



Increases speed and power.

38 9162 – XRAY Micro Motor 300 Super Size with Plug

High-Performance ESC with Brake



Higher-performance ESC for use with up to 300 Super Size motor, includes strong brake (no reverse).

38 9181 – XRAY XMC300 Micro Speed Controller 300 with Brake V-2

High-Performance ESC with Reverse



Higher-performance ESC for use with up to 300 Super Size motor, includes strong brakes and reverse.

38 9182 – XRAY XMC300R Micro Speed Controller 300R with Reverse

6-cell Battery Pack



Increases speed and power. Not for use with stock XMC180 ESC or micro stock motor.

38 9123 – XRAY Battery 6-cell – 1100mAh NiMH – 7.2V

XRAY XMS 01-MG with Metal Gears



High-performance, metal-gear servo with fast response time give fast, strong steering.

#389170 – XRAY XMS01MG Micro Servo - Metal Gear

TROUBLESHOOTING THE M18 ELECTRONICS

Servo Troubleshooting

Servo makes a grinding noise or acts erratic	<ul style="list-style-type: none"> ■ Remove the servo from the car. ■ Open the case and remove the gears. Examine them for broken teeth. If broken, replace with a new gear set.
Servo jitters	<ul style="list-style-type: none"> ■ Remove the servo from the car. ■ Open the case and remove the gears. ■ Spray a zero-residue electrical cleaner into and around the potentiometer and work it in. ■ After the cleaner has dried, re-install the gears and close the case. ■ Possible damaged receiver/transmitter crystal.
Servo doesn't center properly	<ul style="list-style-type: none"> ■ Disconnect the steering rod from the left front steeringblock. Steer left and right with the transmitter several times. If the servo arm does not return to the same neutral position each time, the servo may be damaged. ■ Remove the servo from the car. Open the case and check for proper gear alignment. Next check the case top for wear. If wear is evident, replace the case.
Servo is locked in place	<ul style="list-style-type: none"> ■ Remove the servo from the car. ■ Open the case and check for proper gear alignment. If gears are damaged, replace the gear sets ■ Check the case top for wear. If wear is evident, replace the case.
Servo hums	<ul style="list-style-type: none"> ■ This is normal if the servo is trying to hold position against the force of a load. ■ If the servo hums when no load is applied, try loosening the servo case screws 1/4 to 1/2 turn.
Servo gets hot	<ul style="list-style-type: none"> ■ Check the servo wiring, it should match the receiver being used. ■ If the wiring is okay, the servo motor may be stalled due to a failed gear train. Remove the servo from the car, open the case and inspect for any damage.
Wheels turn in opposite direction to setting input	<ul style="list-style-type: none"> ■ Change the servo reversing setting, and then re-adjust the steering subtrim and EPA settings.

ESC Troubleshooting

Car does not react to signals from transmitter	<ul style="list-style-type: none"> ■ Switch on transmitter and ESC. ■ Check if all connectors (motor, battery, ESC) are properly connected. ■ Check if batteries are charged. ■ Check if ESC and servo connectors are plugged into proper receiver channels, and wire color sequences are correct.
Steering works but motor does not run	<ul style="list-style-type: none"> ■ Check motor wiring connections. ■ Check if ESC is plugged into throttle receiver channel. Check throttle channel operation with a servo. Check wiring color sequence of receive signal harness.
Car goes forward, but does not reverse	<ul style="list-style-type: none"> ■ Turn transmitter on. Turn off ESC. Set throttle trim on transmitter to maximum position. Turn on ESC again.
Car goes forward, but reverses when trigger goes to neutral	<ul style="list-style-type: none"> ■ Turn transmitter on. Turn off ESC then turn it on again (reset); the ESC will find its neutral position. Make sure when you turn on the ESC that the transmitter throttle is in the neutral position. ■ Check if front and rear diffs are both inserted in the diff housings correctly.
Brake or reverse activates when applying forward throttle at transmitter	<ul style="list-style-type: none"> ■ On the transmitter, switch the servo reverse setting for the ESC.
Motor runs slowly/slow acceleration	<ul style="list-style-type: none"> ■ Check wiring connections. ■ Possible bad motor or battery. Replace and check again. ■ Incorrect transmitter adjustment. Refer to 'Transmitter Adjustments' section.
Motor runs backwards	<ul style="list-style-type: none"> ■ Motor wired backwards. Check wiring and reverse.
Receiver glitches/throttle stutters	<ul style="list-style-type: none"> ■ Receiver or antenna may be too close to ESC, power wires, battery, or motor. ■ Possible damaged receiver/transmitter crystal. ■ Check wiring connections. ■ Motor brushes may be worn. Replace motor if necessary. ■ Possible excessive motor current. Use smaller pinion gear. ■ Re-adjust transmitter throttle settings (subtrim, neutral position, EPA).



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