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# MATRIX R3-E



***cenracing***



# Tools

The following tools are necessary to make assembly & maintenance of your new R/C car. both easier & more enjoyable. For your safty, exercise care when using any hand tools, sharp instruments, or power tools during construction. Always use safty glasses. If you have any questions, please consult your local hobby shop or experienced friend.



**Hexagon wrench**  
1.5mm, 2mm, 2.5mm, 3mm.



**Cross wrench** (hexagon socket tools)  
5.5mm, 7mm, 8mm, 10mm, 12mm, 17mm.



**Hobby scissors**  
For cutting and trimming the car's body, decals.



**Grease**  
Lubrication of gears; reduces friction.



**Glue**  
Use to glue tires onto the wheels; temporary repairs.  
**!** Always use hand and eye protection with cyanoacrylic glue.



**Threadlock**  
For locking screws and nuts to prevent loosening.



**Hobby knife**  
Use for trimming and cutting.  
**!** This knife cuts plastic and fingers with equal ease, so be careful



**Flat blade screwdriver**



**Phillips screwdriver**



**Needle nose pliers**  
Clamping parts during assembling and disassembling



**Hand drill**  
2mm, 3mm, 6mm.

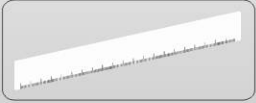


Soldering iron (40~50 watts) and a small amount of solder.

**!** Be careful iron is very hot



**Liquid dish soap**



**Ruler**

# SAFETY PRECAUTIONS

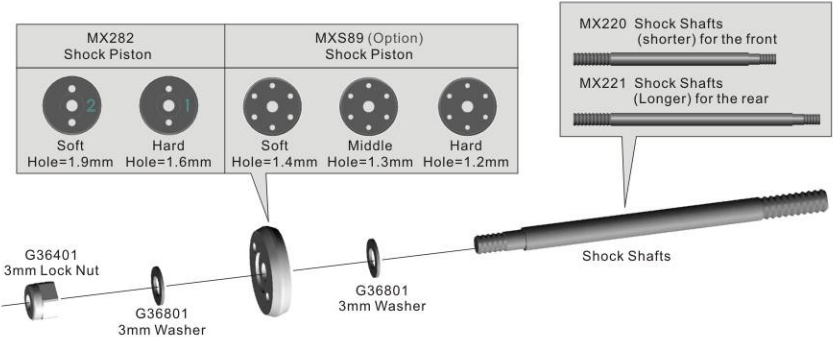
- This radio controlled model is not a toy. For yours and others safty, the following guidelines and cautions should be followed carefully.
 

**WARNING:** Do not operate R/C car in the following locations:

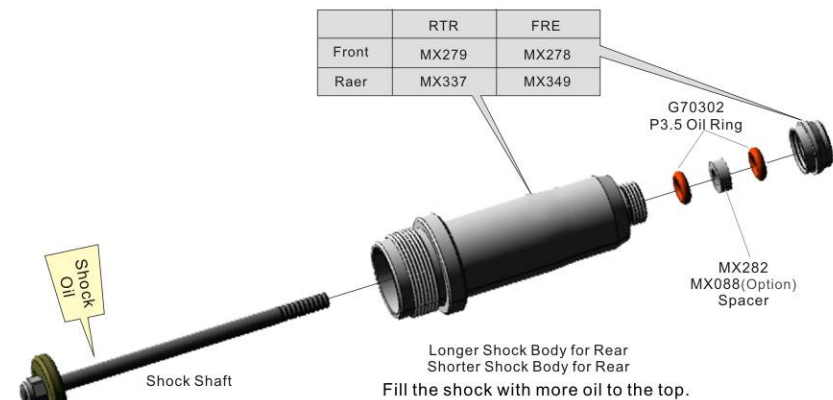
  1. Street
  2. Crowded area; keep away from children.
  3. Indoors or an unventilated room.

**SUGGESTION:** Outside in a large open area without obstructions; R/C race track.
- This kit uses many kinds of small parts, sharp tools, large polybag, and chemical materials. Please keep these and other potentially harmful items away from children.
- Use only FCC approved ground frequency crystals in the R/C unit.
- Do not operate a Gas powered car in a residential area. The noise could disturb the peace.
- If you are operating several cars together, check the frequencies to make sure none are the same. Operating the cars on the same frequency can cause radio interference and loss of control of the car.
- If the car is not operating properly, stop immediately and check the condition of the car.
- To avoid damage to the R/C equipment, or losing control of the car, avoid running in or near water.
- To always maintain control of your car and to avoid a jump start, Please do the following:
  1. ON - First turn on the transmitter, then the car's receiver.
  2. OFF - Turn off the car's receiver, then the transmitter.
- Do not touch the R/C car after operation, as the engine, muffler, electric motor, battery, and speed controller will be very hot! Allow to cool before handling. While charging your car's battery, it could become hot. Carefully read your battery charger's instructions for proper use.
- When the R/C car is in operation, do not touch any of its moving parts such as drive shafts, wheel ,etc., as the rotating parts can cause serious injury.
- After operation of the R/C car, it is necessary to remove the battery for protection of the R/C equipment.
- Paint and grease are extremely flammable, keep away from sources of ignition. Do not puncture or throw away spray paint cans into garbage.

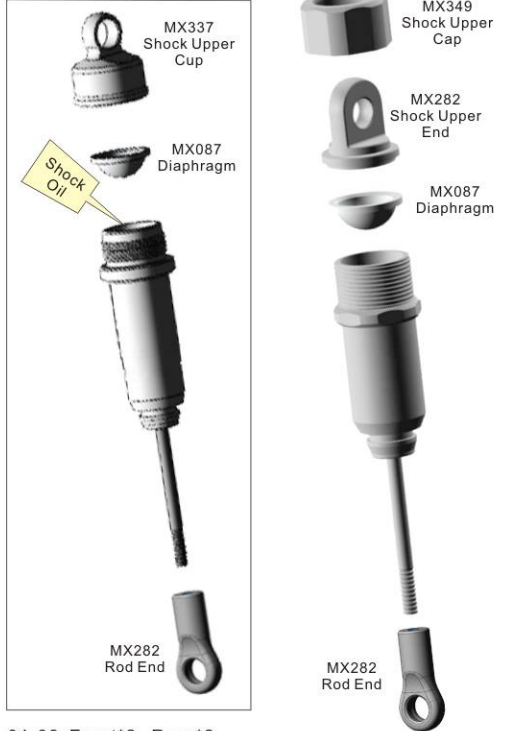
## 01-01 Shock Shaft (Front\*2, Rear\*2)



## 01-02 Shock Body (Front\*2, Rear\*2)



### Option



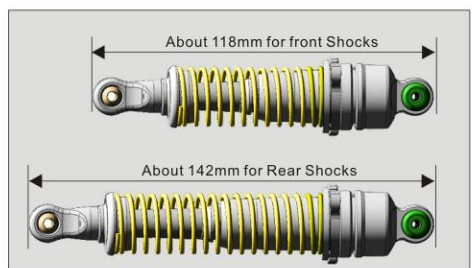
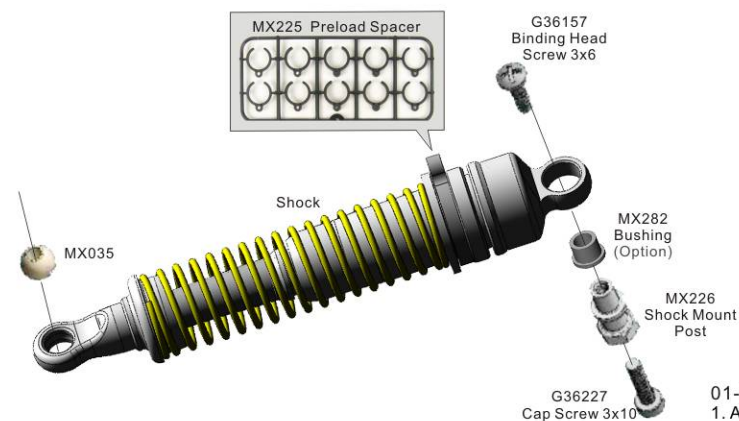
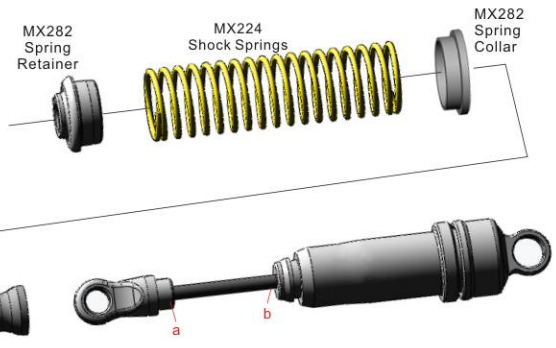
### 01-03 Front\*2, Rear\*2

1. Fill the shock body up to the top with oil.
2. Slowly push the shock shaft in and out to remove all air bubbles. If oil level drops do not let the piston come out of the oil.
3. Once you have all the air bubbles worked out.
4. Put the rubber diaphragm on, then slowly tighten down the shock cap.
5. Loosen the shock cap 1/2-3/4 turn and slowly press the shock shaft all the way in.
6. With the shock shaft pressed all the way in tighten down the shock cap.
7. Shocks should feel smooth. If you feel air bubbles, remove cap and add more oil, then repeat. If shock shafts don't go all the way in you need to bleed a little more oil out.

## 01-04 Front\*2, Rear\*2

1. Clip the spring retainer onto the lower shock eyelet carefully securing the bottom of the shock boot at the same time.
- \* Use the Preload spacers on the shocks for adjusting the preload of the springs.(If needed)

Option Spring	MXS86 Pink Soft	MXS87 Pink Medium	MXS88 Green Hard
Springs (Longer) for the rear			
Springs (Shorter) for the front			



## 01-05 Front\*2, Rear\*2

1. Assemble as shown. The MX226 upper shock mount will be attached to the shock towers in a later step.



## 02-01 \*1

1. Follow the diagram for the front and rear differential assemblies.



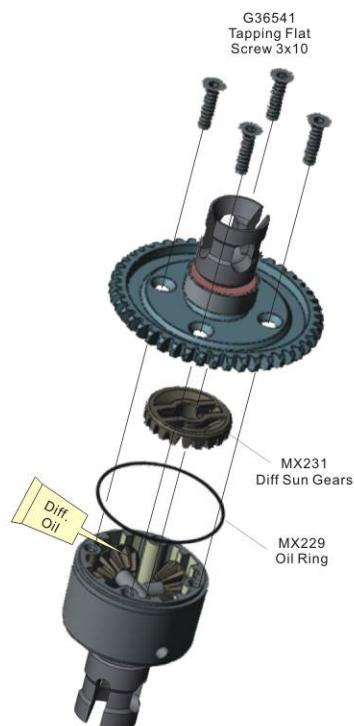
## 02-02 \*1

1. Insert the MX231 differential Planet gears onto the cross pins making sure that they spin freely on the shafts.
  2. Next slide on the washers behind each differential Planet gear (Option).
  3. Slide the cross pins with the differential Planet gears down into the differential case.
- NOTE: the differential case has specific grooves in which the cross pins must slide into.



## 02-03 \*1

1. Follow diagram for Cross Pin and Diff Planet Gear then slide into the diff housing.
2. Rotate the outdrive to check for smooth operation.



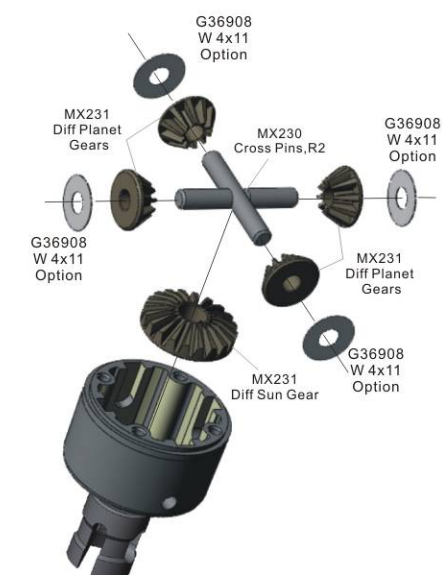
## 02-04 \*2

1. Fill the housing up with oil just slightly below the top of the gears.
2. Secure the diff case cover using four 3x10 screws.
3. Make sure differentials are smooth.



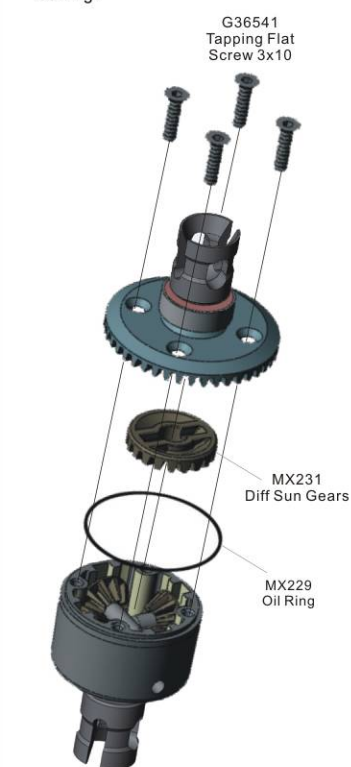
## 02-05 \*2

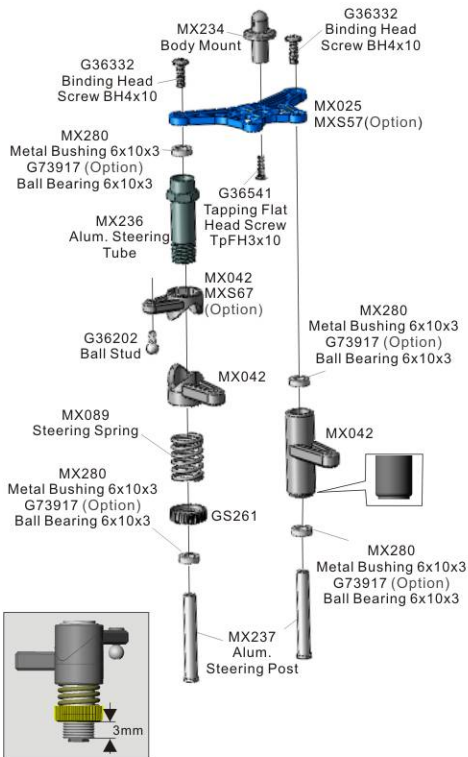
1. Insert the MX231 differential Planet gears onto the cross pins making sure that they spin freely on the shafts.
  2. Next slide on the washers behind each differential Planet gear (Option).
  3. Slide the cross pins with the differential Planet gears down into the differential case.
- NOTE: the differential case has specific grooves in which the cross pins must slide into.



## 02-06 \*2

1. Using four G36541 screws, secure the differential ring gear to the differential case.
- NOTE: Do not over tighten the screws as this may strip the holes and cause leaking.





#### 03-01 Steering Assembly

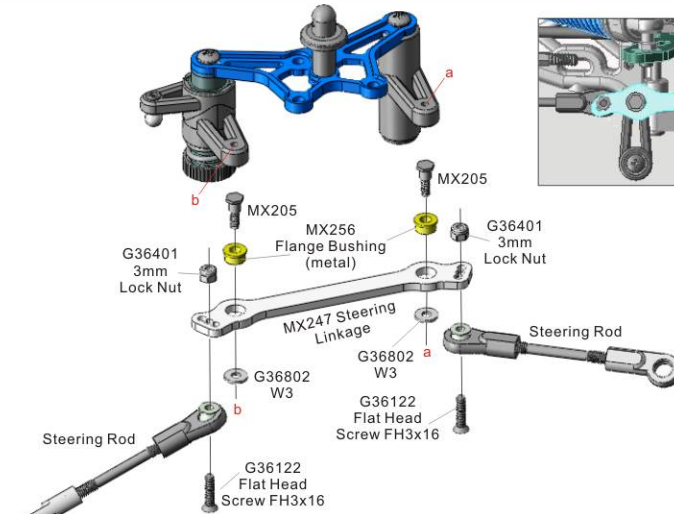
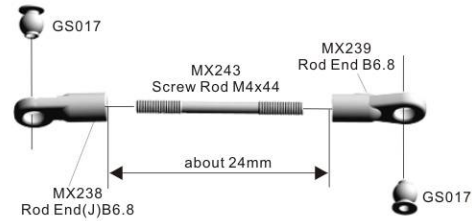
1. Assemble as shown in the diagram.
2. Tighten down the servo saver nut until you have about 6mm of threads showing.

#### 03-02 Steering Rod\*2

1. Thread two rod ends onto the tie rod.
2. Gently press one GS017 ball into each eyelet.

##### Option

MXS82 Screw Rod M4x44



#### 03-03

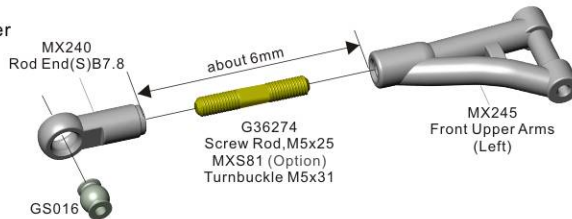
1. Secure the steering rods to the center link using two 3x16 screws and 3mm lock nuts.
2. Next mount the center link assembly to the steering bell cranks as shown. Make sure the entire steering assembly is totally free.

#### 03-04 Upper Arm\*2

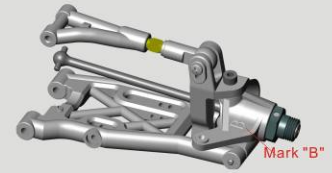
1. Thread the Screw Rod into the upper arm and eyelet.

\*We recommend you take a look at the thread pattern and get them to match from left to right. Be sure do not overtighten

2. Repeat one more time.

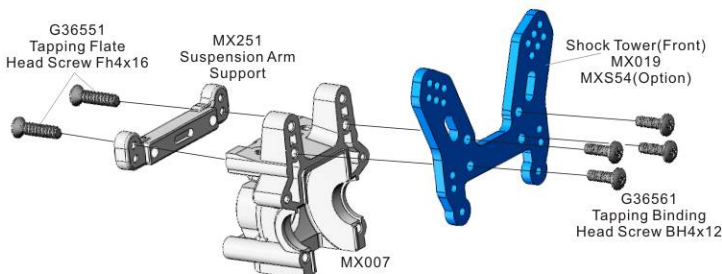
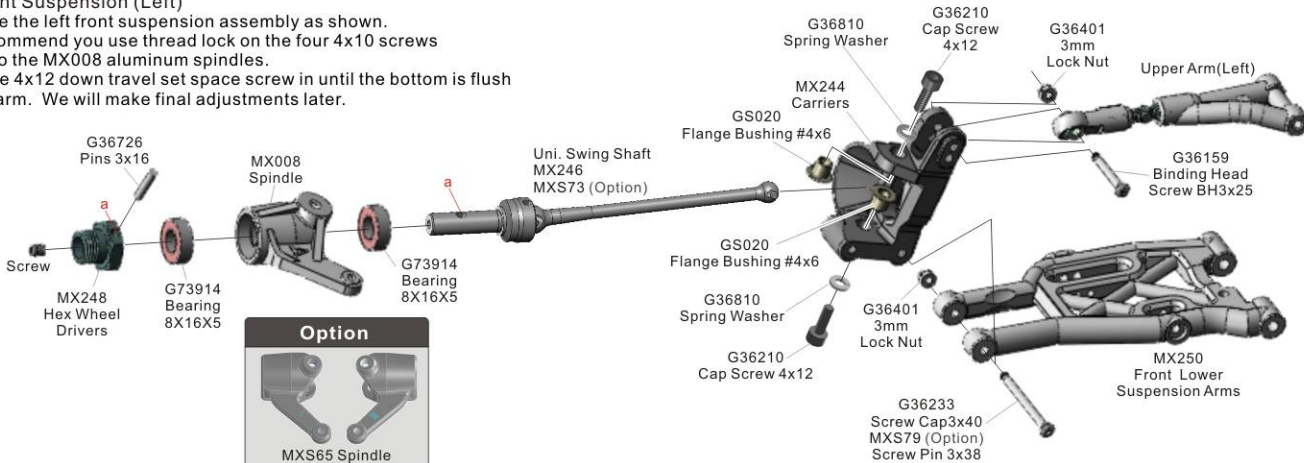


#### Front Suspension (Right)



#### 03-05 Front Suspension (Left)

1. Assemble the left front suspension assembly as shown.
2. \* We recommend you use thread lock on the four 4x10 screws going into the MX008 aluminum spindles.
3. Screw the 4x12 down travel set space screw in until the bottom is flush with the arm. We will make final adjustments later.



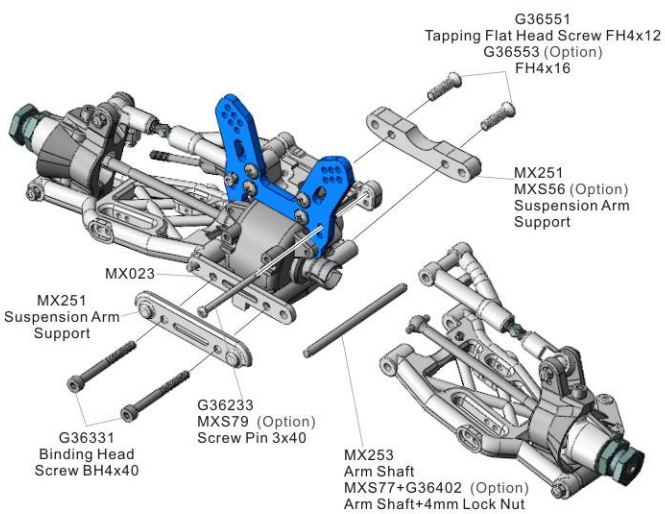
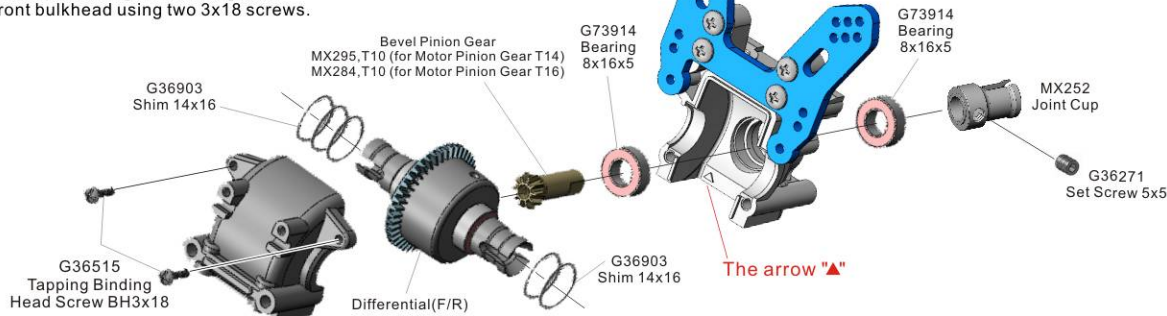
#### 03-06 Front Bulkhead

1. Mount the upper suspension arm support to the MX007 front bulkhead using two screws.
2. Secure the Front shock tower to the bulkhead using four 4x12 button head screws.



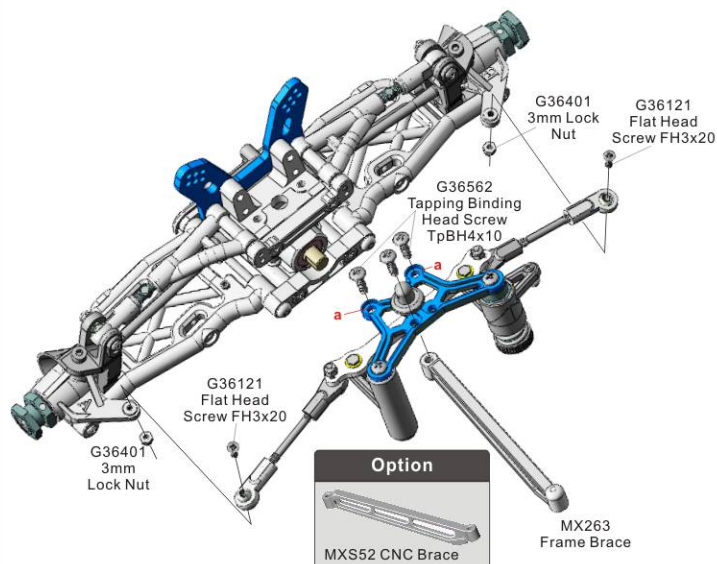
### 03-07 Front Bulkhead

1. Insert two 8x16x5 bearings into the front bulkhead as shown.
2. Insert the MX255 driving gear through both 8x16x5 bearings followed by your differential.
- \* Look for a small arrow on the bottom of the bulkhead; this is the side the differential gear should go on.
3. Seal the front bulkhead using two 3x18 screws.



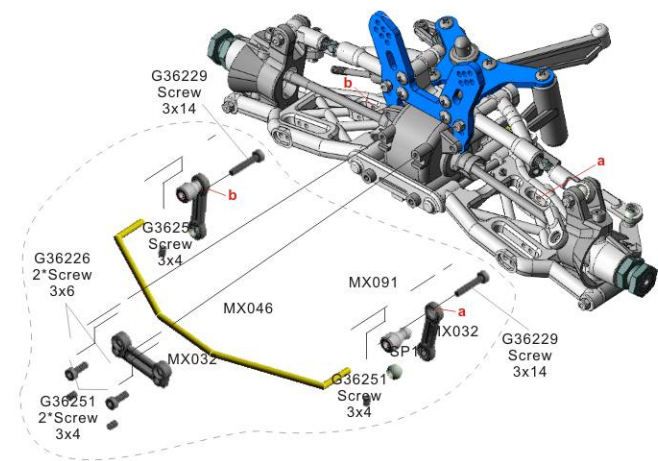
### 03-08 Front Suspension

1. Attach the front left suspension arm assembly to the front bulkhead as shown.
- The short pin is used for the upper arm and the longer pin for the lower arm.
2. Repeat for other side.



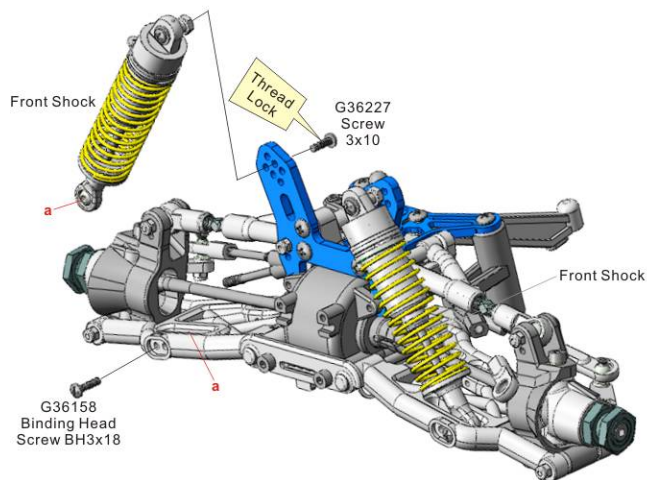
### 03-09 Steering Saver

1. First attach the Frame brace to the front upper plate using one 4x10 button head screw.
2. Attach the steering assembly to the front bulkhead using two 4x10 screws.
3. Finish this step by mounting the steering rods to the spindles using 3x20 screws and lock nuts.



### 03-10 Front Sway Bar (Not Included)

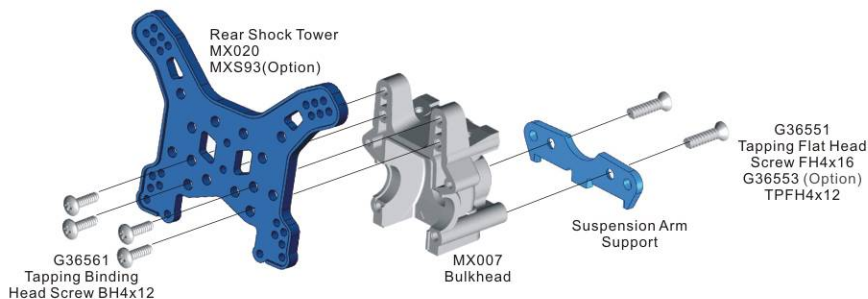
1. Assemble the sway bar as shown.
2. Don't tighten down the setscrews until sway bar is fully installed. Then with everything sitting flat, tighten the setscrews.



### 03-11 Front Shock

1. Mount the shocks to the upper shock tower using 3x10 screws. We suggest using the upper inside hole.
2. Mount the lower shocks to the suspension arms using 3x18 screws. We suggest using the outside hole on the arm.

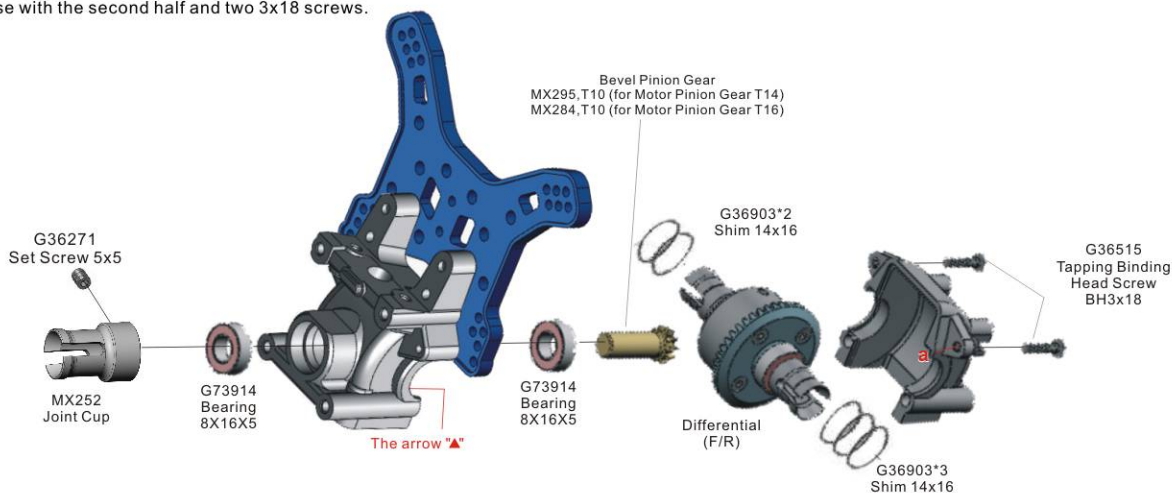
## Suspension Arm Support

**04-01 Rear Bulkhead**

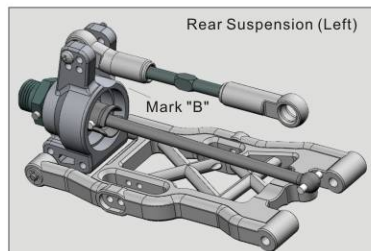
1. Secure the shock tower to the bulkhead using four 4x12 button head screws.
2. Secure the arm support to the bulkhead using two screws.

**04-02 Rear Bulkhead**

1. Insert two 8x16x5 bearings into the rear bulkhead followed by the MX255 driving gear.
2. Insert the rear differential into the housing making sure the gear is on the side with the arrow on the bottom of the case.
3. Close the case with the second half and two 3x18 screws.



## Rear Suspension (Left)

**04-04 Rear Suspension (Right)**

1. Assemble the driveshaft as shown.
2. Press Two 8x16x5 bearing into each side of the MX260 hub.
3. Insert assembled driveshaft through the bearings and the hub.
4. Align the MX248 wheel hex with axle and press pin in. Secure with set screws.
5. Attach the assembled hub assembly to the lower suspension arm using one hinge pin, spacer and 3mm Lock Nut. Make sure the spacer is towards the back of the car.
6. Secure the upper rod to the hub using one 3x25 screws and 3mm lock nut.
7. Repeat for left side.

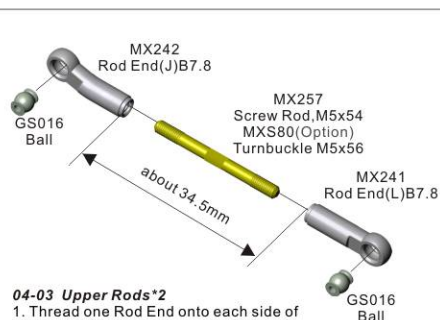
## Matrix R3 FRE

MXS74 Uni. Shaft

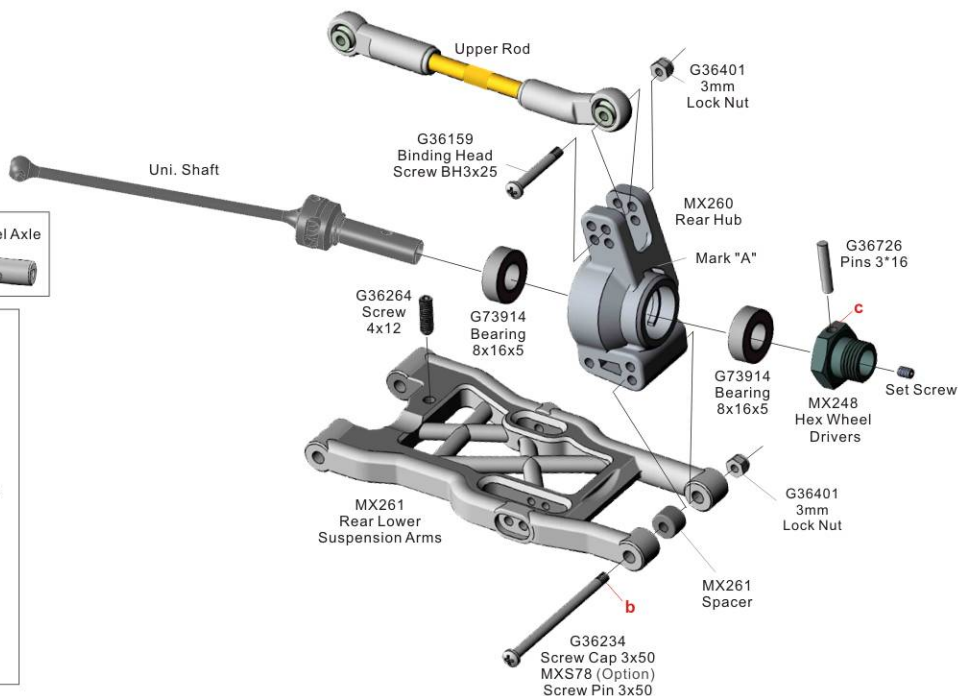
## Matrix R3 RTR

MX258 Dogbone

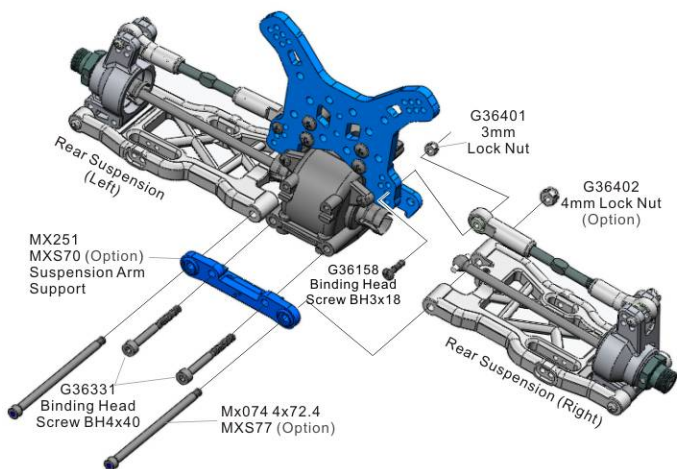
MX259 Wheel Axle

**04-03 Upper Rods\*2**

1. Thread one Rod End onto each side of the tie rod.
2. Snap one ball into each eyelet.
3. Repeat on other rod.

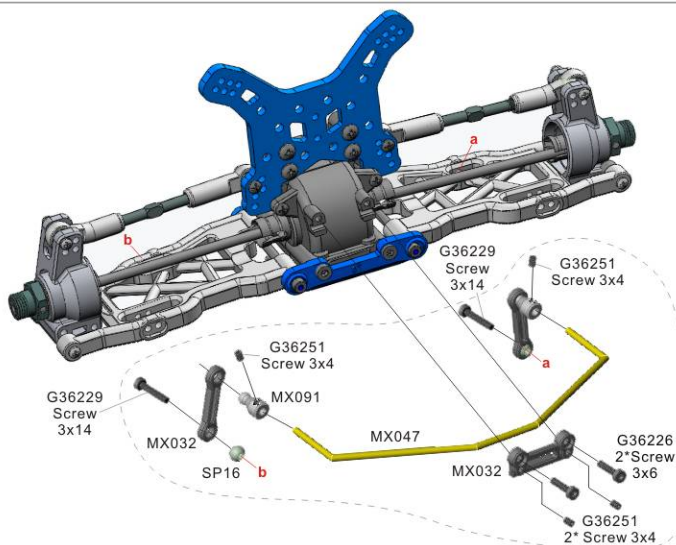






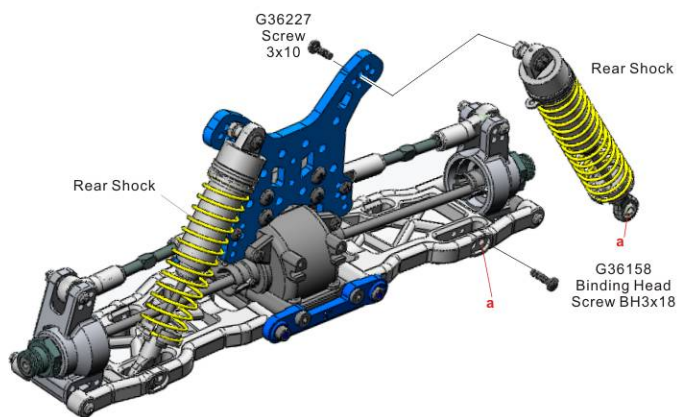
#### 04-05 Rear Suspension

1. Attach the rear suspension arms to the rear bulkhead as shown.
2. Secure assembly using two 4x40 screws.



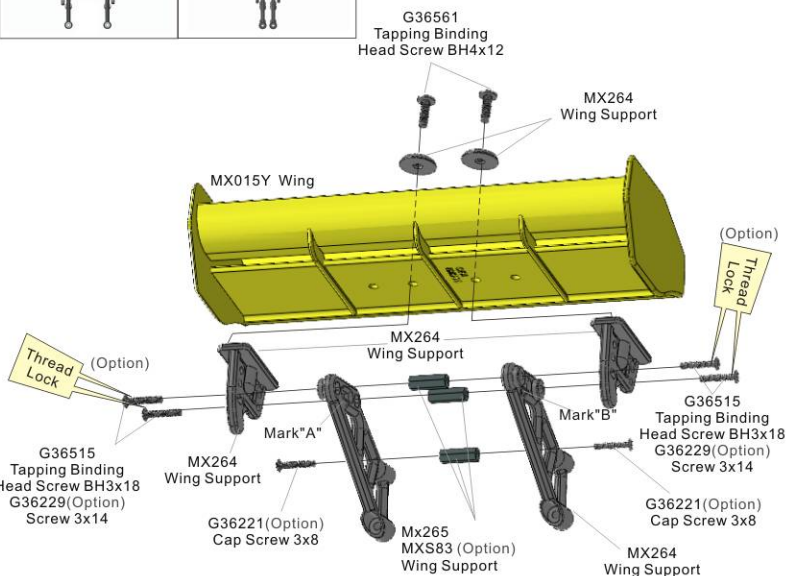
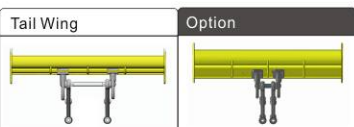
#### 04-06 Rear Sway Bar (Not Included)

1. Assemble the sway bar as shown. Leave the setscrews loose until the sway bar is secure.
2. Once you have all everything correctly secured, lay the car on a flat surface. Then tighten down the setscrews.



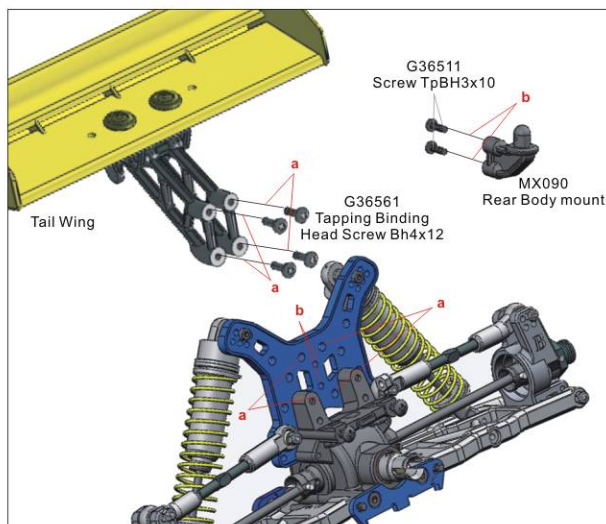
#### 04-07 Rear Shock

1. Secure the shocks to the shock tower using two 3x10 screws. We suggest using the upper inside hole.
2. Mount the shock to the outer hole on the suspension arm using 3x18 screws.



#### 04-08 Tail Wing

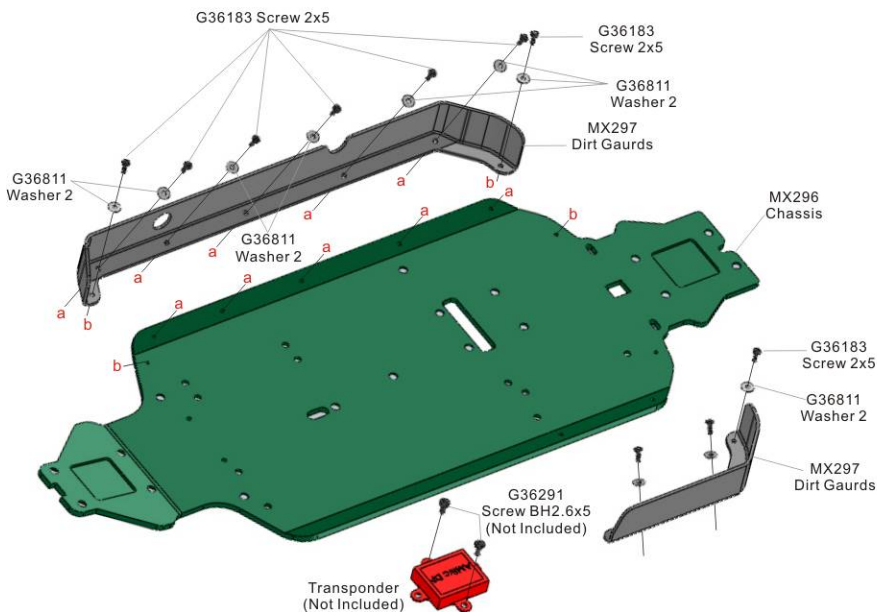
1. Start by putting some screws through the wing mount and the wing support, screwing into the wing braces.
2. Repeat for other side.
3. Secure the MX015 wing to the wing assembly using two 4x12 screws and MX264 plastic washers.



#### 04-09 Tail Wing

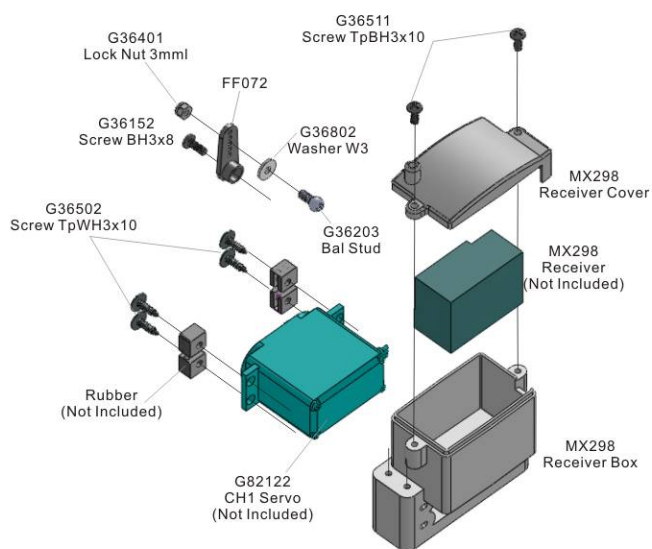
1. Mount the entire wing assembly to the rear shock tower using four 4x12 button head screws.





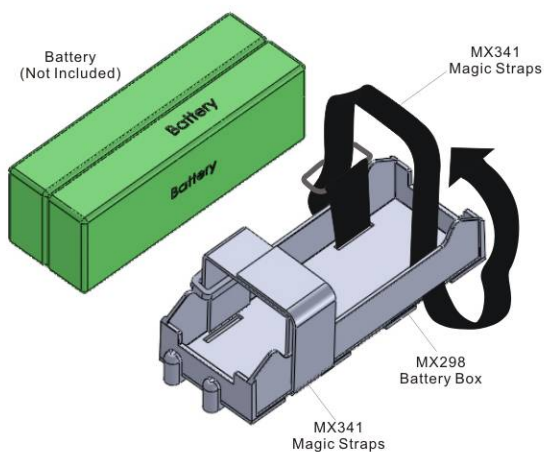
### 05-01 Chassis

1. Mount and secure the right side dirt guard by installing seven 2x5mm screws while using #2 washers onto the chassis as shown.
2. The left side / rear dirt guard is installed using three 2x5mm screws along with #2 washers as shown.



### 05-02 Receiver Box

1. The receiver box holds both the steering servo and the receiver. Safely secure the receiver inside the box by using two 3x10mm screws. Install the steering servo by utilizing the servos' rubber vibration grommets along with four 3x10mm tapping screws as shown in the drawing.



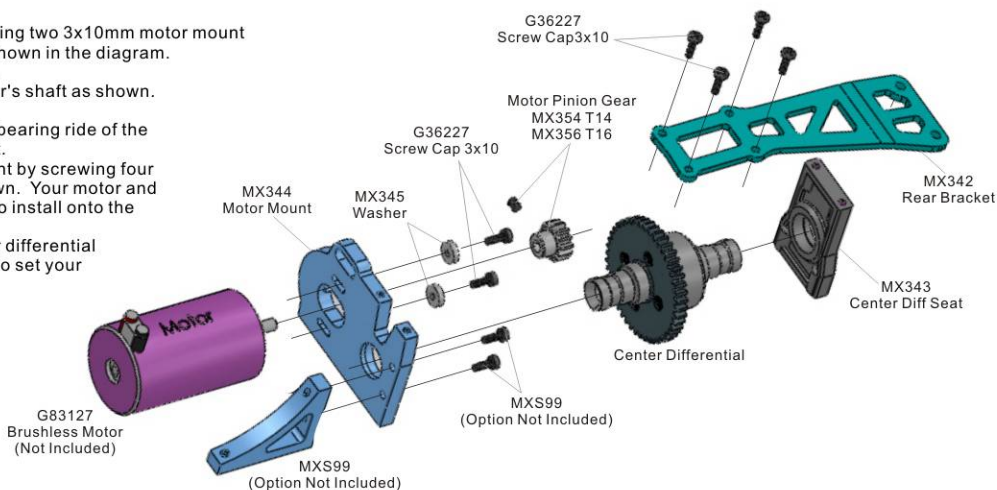
### 05-03 Battery Box

1. The battery box can secure various sizes and battery configurations. Secure your battery by using the CEN magic straps as shown. Be sure that your battery is tight and unable to move within the battery box as any movement can cause serious battery damage.


### 05-04 Motor Gear Unit

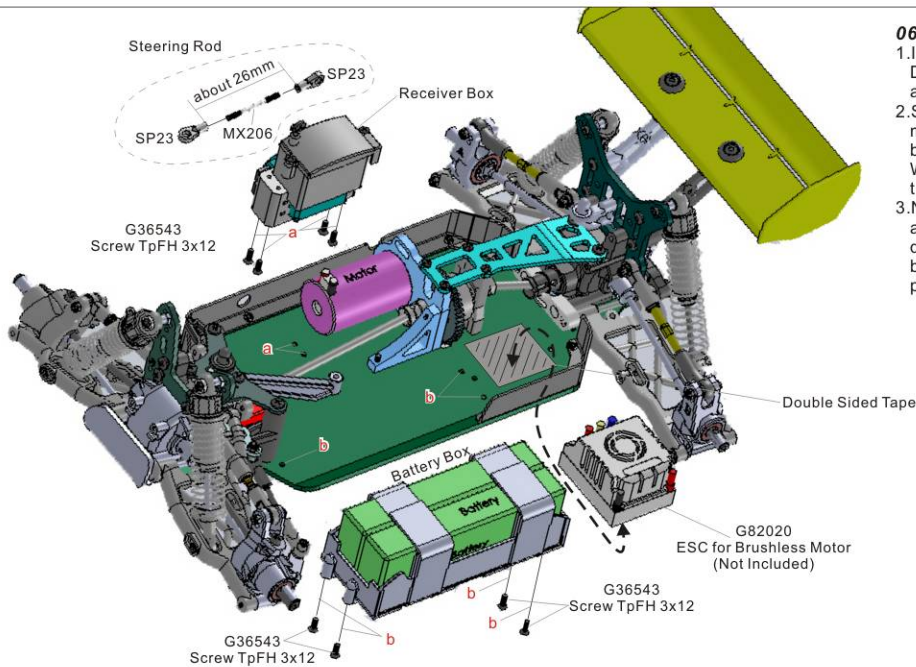
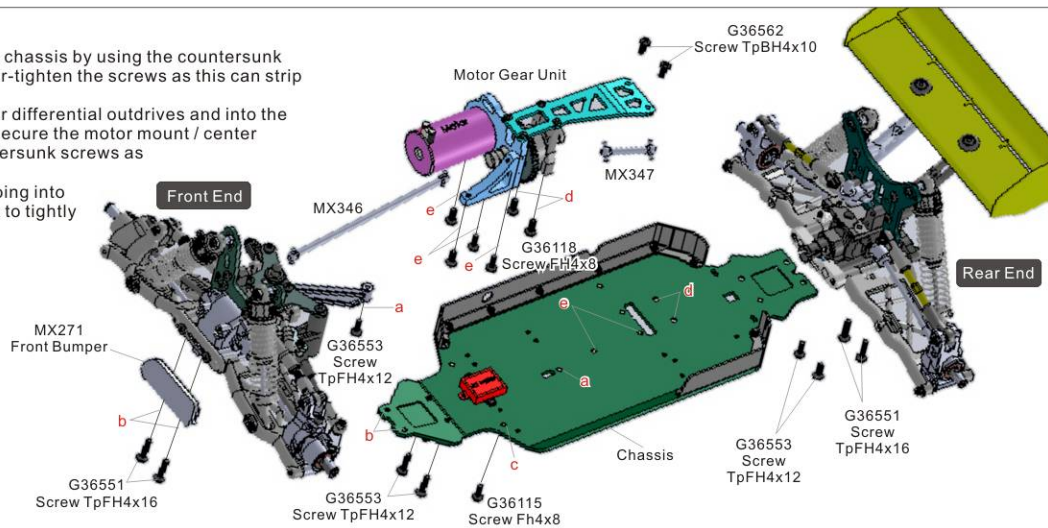
1. Secure the motor to the motor mount by using two 3x10mm motor mount screws and two motor mount washers as shown in the diagram. Do not tighten down the motor at this time.
2. Secure the desired pinion gear to the motor's shaft as shown. It is recommended to use thread lock.
3. Next, insert the center differential into the bearing side of the motor mount and the rear center diff mount.
4. Secure the center differential to each mount by screwing four 3x10mm through the rear top plate as shown. Your motor and center differential assembly is now ready to install onto the chassis.

\* Before installing the Motor Mount / Center differential assembly into the car, it is recommended to set your gear mesh at this time.



## 06-01 Chassis Assembly

1. Secure the front and rear ends to the main chassis by using the countersunk 4mm screws as shown. Be sure to not over-tighten the screws as this can strip the differential cases.
  2. Slide the center drive shafts into the center differential outdrives and into the Front and Rear ends of the vehicle. Now secure the motor mount / center differential assembly by using 4 mm countersunk screws as shown.  
Be sure to use thread lock in the screws going into the aluminum motor mount. It is important to tightly secure the motor mount to the chassis.
- 

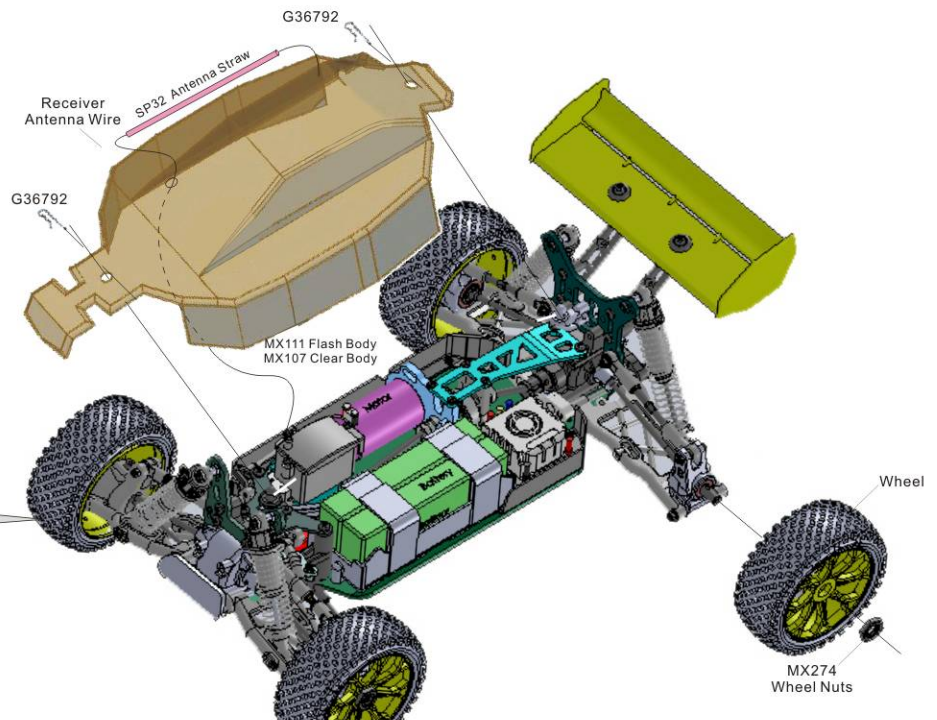


## 06-02 Electronic installation

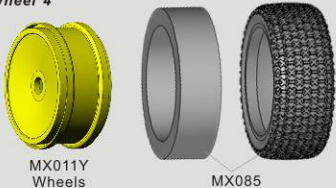
1. Install the battery mount by using four 3x12mm screws. Do not over tighten as this can strip the battery mount and cause damage to the battery.
2. Secure the ESC by using high quality double sided mounting tape. Use enough tape to cover the entire bottom side of the ESC to ensure good contact. We recommend cleaning both surfaces before applying the double sided tape.
3. Next install the receiver box and steering servo assembly with four 3x12mm screws as show in the drawing. Run your wires accordingly to the receiver box so that they do not interfere with any moving parts on the vehicle.

### 06-03 *Wheels and Body*

1. Mount the foam inside the tire then glue to the wheel using C.A. glue.
2. Allow glue to fully dry then secure to the car using wheel nuts.
3. After you have painted the body, mount it to the car by drilling out the holes for the body mounts.
4. Cut a hole large enough to clear the engine head and a hole in the windshield to be able to fully open the fuel tank. This hole will also provide additional airflow to your engine.
5. Secure the body with two large body clips.



**Wheel\*4**



MX011Y  
Wheels

MX085

Diagram illustrating the assembly of a wheel and nut. The wheel is labeled "Wheel" and the nut is labeled "MX274 Wheel Nuts".



## Frame

Spare Parts	
MX007	Gear Box
MX008	Spindle
MX011Y	Wheels (Yellow)
MX015	Wing
MX015Y	Wing (Yellow)
MX019	Shock Tower (Front)
MX020	Shock Tower (Rear)
MX023	Front Aluminum Suspension Plate
MX025	Upper Plate
MX032	Anti-Roll Plastic Parts
MX035	Ball B6.8
MX042	Servo Saver Plastic Parts
MX046	Anti-Roll Bar (Front)
MX047	Anti-Roll Bar (Rear)
MX074	Rear Suspension Arm Hinge Pin4x74
MX085	X-Pattern Tires
MX087	Shock Diaphragm
MX088	Shock Oil Ring Spacer
MX089	Steering Spring
MX091	Anti-roll Pivot
MX107	Matrix R3 Body (Clear)
MX111	Matrix R3 Body
MX205	Bolt
MX206	Threaded Rod M3x40
MX220	Shock Rod(Front)55.5mm
MX221	Shock Rod(Rear)67.5mm
MX225	Preload Spacer
MX226	Shock Mount Post
MX227	Brake Outdrivers
MX229	Diff Case
MX230	Cross Pins
MX231	Diff Gears
MX232	Outdriver
MX234	Body Mount
MX236	Alum. Steering Tube
MX237	Alum. Steering Post
MX238	Rod End(J)B6.8
MX239	Rod End B6.8
MX240	Rod End(S)B7.8
MX241	Rod End(L)B7.8
MX242	Rod End(J)B7.8
MX243	Screw Rod M4*44
MX244	Carriers
MX245	Front Upper Arms
MX246	Uni. Swing Shaft
MX247	Steering Linkage
MX248	Hex Wheel Drivers
MX250	Front Lower Suspension Arms
MX251	Suspension Arm Support
MX252	Joint Cup
MX253	Arm Shaft
MX256	Flange Bushing (metal)
MX257	Screw Rod,M5x54
MX258	Dogbone,R2-91.5
MX259	Wheel Axle
MX260	Rear Hub
MX261	Rear Lower Suspension Arms
MX262	Screw Pin 3x49.5
MX263	Frame Brace
MX264	Wing Support
MX265	Wing Brace
MX271	Front Bumper
MX274	Wheel Nuts
MX279	Shock Alumium Parts (Front)
MX280	Metal Bushing 6x10x3
MX282	Shock Plastic Parts
MX284	Ring Gear (T43) and Pinion Gear (T10)
MX295	Ring Gear (T38) and Pinion Gear (T10)
MX296	Chassis, R3 EP
MX297	Dirt Guards

MX337	Shock Aluminum Parts (Rear)
MX338	Spur Gear T46
MX354	Motor Pinion Gear T14
MX356	Motor Pinion Gear T16
MXS86	Shock Springs (S)
GS016	Ball B7.8
GS017	Ball B6.8
GS020	Flange Bushing#4x6
GS261	Adjusting Nut
G36115	Flat Head Screw FH4x8
G36121	Flat Head Screw FH3x20
G36122	Flat Head Screw FH3x16
G36151	Binding Head Screw BH3x12
G36152	Binding Head Screw BH3x8
G36155	Binding Head Screw BH3x20
G36157	Binding Head Screw BH3x6
G36158	Binding Head Screw BH3x18
G36159	Binding Head Screw BH3x25
G36172	Round Head Screw RH4x40
G36181	Round Head Screw RH2x10
G36182	Round Head Screw RH2x8
G36201	Flange Hex Head Screw FH4x10
G36202	Ball Studs B5.8xM3x14
G36210	Cap Screw 4x12
G36211	Cap Screw 4x40
G36212	Cap Screw 4x10
G36221	Cap Screw 3x8
G36226	Cap Screw 3x6
G36227	Cap Screw 3x10
G36229	Cap Screw 3x14
G36233	Screw Cap3x40
G36234	Screw Cap3x50
G36251	Set Screw 3x4
G36261	Set Screw 4x4
G36262	Set Screw 4x5
G36264	Set Screw 4x12
G36271	Set Screw 5x5
G36274	Screw Rod,M5x25
G36331	Binding Head Screw BH4x40
G36332	Binding Head Screw BH4x10
G36401	Lock Nut 3
G36402	4mm Lock Nut
G36501	Tapping Flange Screw TpWH3x14
G36511	Tapping Binding Head Screw TpBH3x10
G36515	Tapping Binding Head Screw TpBH3x18
G36541	Tapping Flat Screw TpFH3x10
G36553	Tapping Flat Head Screw TpFH4x12
G36561	Tapping Binding Head Screw TpBH4x17
G36562	Tapping Binding Head Screw TpBH4x10
G36714	Pins 2.5x12
G36724	Pin 3x12
G36726	Pin 3x16
G36791	Hook Pin #6
G36792	Hook Pin #8(Longer)
G36801	Washer 3x6x0.5
G36802	Washer 3x8x1
G36810	Spring Washer
G36901	Shim 5x7
G36902	Shim 8x11.5
G36903	Shim 14x11.5
G70302	Oil Ring P3.5
G70306	Oil Ring P6
G73914	Bearing 8x16x5
FF072	Servo Horn
SP16	Ball 5.8
SP23	Rod End 5.8
SP32	Antenna Straw

[illegible]

# MATRIX R3-E



No.	9576	Wheelbase(mm)	326
Name	Matrix R3-E	Width(mm)	305
Scale	1:8	Clearance(mm)	25
Power	Electric	Wheel(mm)	
Type	Off Road Buggy	(Diameter)x(Width)	113x45
Drive	4WD	Tranny Gear Ratio	3.8
		Final Gear Ratio	12.486

**Brushless  
power**



#### CENCHAIN CO., LTD.

No.16, LANE 105, CHENG FU RD,  
SANHSIA, TAIPEI HSIEN TAIWAN, R.O.C  
TEL: 886-2-26681881  
FAX: 866-2-26681899  
E-mail: rchobby@ms11.hinet.net

#### CEN RACING USA

15332 E. Valley Blvd.  
City of Industry, CA. 91746  
Tel: 626-333-1777  
Fax: 626-333-7727  
E-mail: sales@cenracing.com

[www.cenracing.com](http://www.cenracing.com)

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