

MANUAL

Predator **X10**

A detailed close-up photograph of the Predator X10 engine, showing various mechanical components like the cylinder head, valves, and pistons. The image is in black and white and is positioned in the bottom right corner of the manual cover.

Tools Required

Essential Tools :

- 1.5, 2.0 & 3.0mm Hex drivers
- 5.5 & 7.0mm A/F nut spinners
- 5.5mm & 3/8" A/F open spanners
- Long Nosed Pliers
- Scalpel

Other Useful Tools :

- Metric steel rule
- Curved scissors
- Miniature circlip pliers (internal)

Additional Materials

Essential Materials :

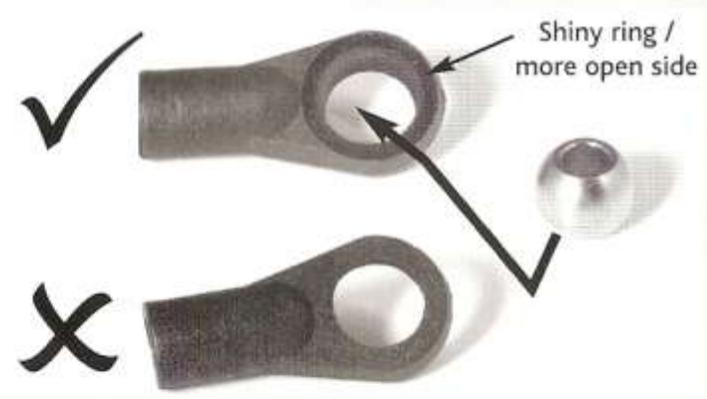
- Silicone Diff Grease
- 2 Part Epoxy Resin
- Thin CA glue (superglue)
- Threadlock
- Polycarbonate Paints for Bodyshell
- Shock Oil

Other Equipment Required :

- 2 Channel Radio Control
- Steering servo & arm
- Motor & pinion
- Speed Controller
- Batteries (7.2v saddle pack)
- Tyres/inserts

Ball Joint Assembly

Always insert the balls into the ball joints from the side indicated



Cyno Acrylate (thin superglue/tyre glue)



Grease



5 min 2-pt epoxy



Threadlock



X1MN (1)
Slipper clutch coupling



X1NN (1)
Slipper clutch pressure plate



X1ON (1)
Slipper clutch adj. nut

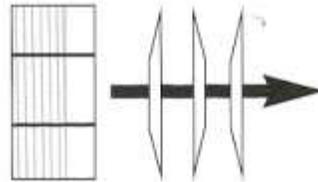


X32LN (3)
Disk spring washers



X32LX (1)
73t spur gear Assembly

1a. Slipper Clutch Assembly



Note orientation of Slipper clutch nut and spring washers.

Slipper Clutch Setting :

set-up tip

Your slipper clutch, when correctly adjusted, will absorb sudden shocks from the wheels, which occur when the car lands from a jump or hits a rut in the track surface. The car's stability will be improved and the transmission protected.

Set it as loosely as possible, and yet just tight enough to prevent slipping under full acceleration.

Use a 3/8" open ended spanner to turn the Adjusting Nut.

Turn the adjusting nut by hand until it just touches the spring washers, then tighten another 1 to 2 turns using a 3/8" AF spanner :-

EXTREME EXAMPLES

Rough low grip conditions Run the slipper at its loosest 1 turn preload.

Smooth high grip conditions Run the slipper at its tightest 2 turns preload.



X1HN (2)
Steel pinion gear



T108 (2)
Pinion collar

X1QX (2)
O ring

X12N (2)
6x12x4 flanged bearing

1b



X1EN (1)
One way bearing coupling



X29IS (1)
Brake balance collet

Build tip

Clean out excess oil and
replace with diff grease

1c. One way/brake collet



Then apply small amount
AFTER ASSEMBLY ONLY

FIRST
Press FIRMLY together

X1GX (1)
X10 Composite Chassis



X1DN (1)
Propshaft 1-way adaptor

X1BN (1)
Carbon-fibre propshaft



X29JS (3)
RED silicone 'O'Ring

Plus completed items...
Slipper clutch (from step 1a)
Pinions (from 1b)
Brake balance (from step 1c)

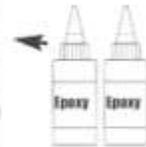
set-up tip

Brake Balance

You can adjust the amount of front brakes by moving the 'O'-rings, onto the Propshaft (no Brakes) or into the recess in the Brake Collett for full brakes. The more 'O'-rings that you place in the Brake Collett recess, the more front brakes you will have.

This is a subtle adjustment, even with all 3 "O" Rings on the Brake Collett there is just gentle front Brakes. Testing has proven this range to be the optimum amount of front brake to use.

1d. Propshaft & assembly into chassis



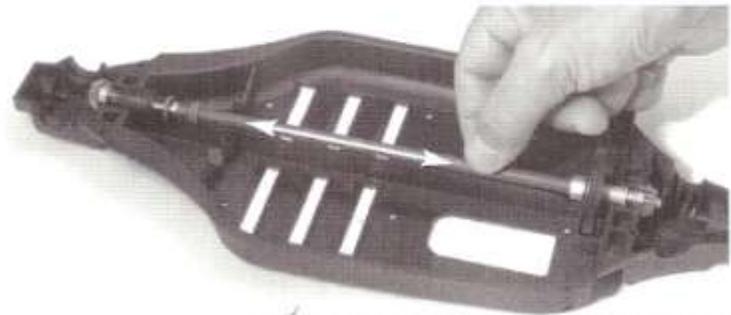
CHECK THE COMPLETE PROPSHAFT ASSEMBLY IN THE CAR BEFORE APPLYING ADHESIVE!

Assemble the propshaft and lower it into the chassis as shown.

Check the "end float" (forwards & backwards movement of the prop shaft). There should be 1.0 -1.5mm of end float (End float prevents the bearings from binding when the chassis flexes, for example when the car lands from a jump)

Mix a small amount of 2 part epoxy and smear some, inside of the 1-way adaptor & slipper clutch and bond them to the carbon-fibre propshaft.

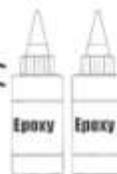
CAUTION : Keep checking the end float until the epoxy has hardened, because the heat generated from the setting epoxy glue can warm trapped air, causing the Slipper Clutch to move.



END FLOAT MUST BE SET AT 1.0 to 2.0mm

FLAT THIS END

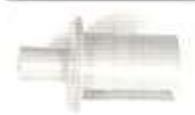
(Allows excess glue & air to escape)



2. Differentials (Build 2)



X2AN (2)
39T Composite crown gear



X2EA (2)
Hardened alloy diff half - short



X2FA (2)
Hardened alloy diff half - long



X2HN (4)
Diff thrust plate

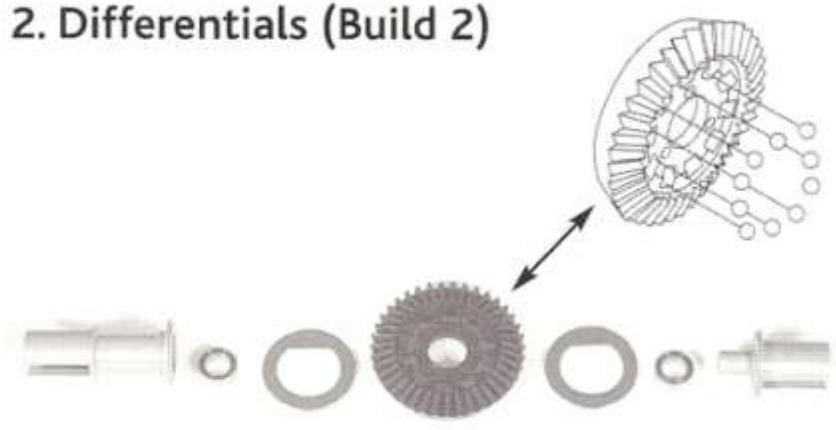


X2IN (4)
Small thrust washer

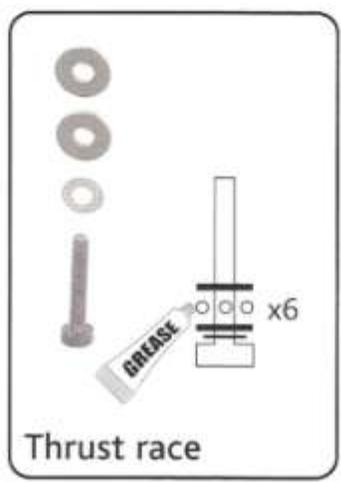
X2ZX (20)
Ceramic 1/8" ball

X2YX (12)
Ceramic 2mm ball

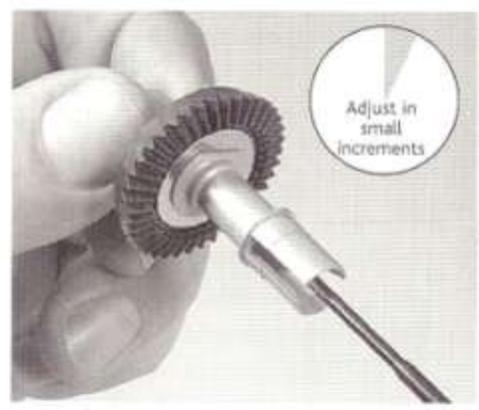
- (4) 5x8x2.5 bearing
- (2) M2 x12 cap screw
- (2) M2 washer



Apply pure silicone diff grease liberally (non-abrasive type)

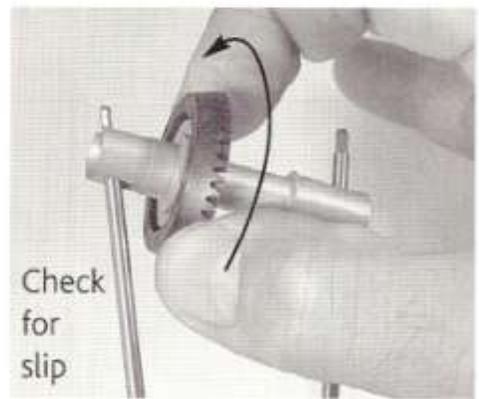
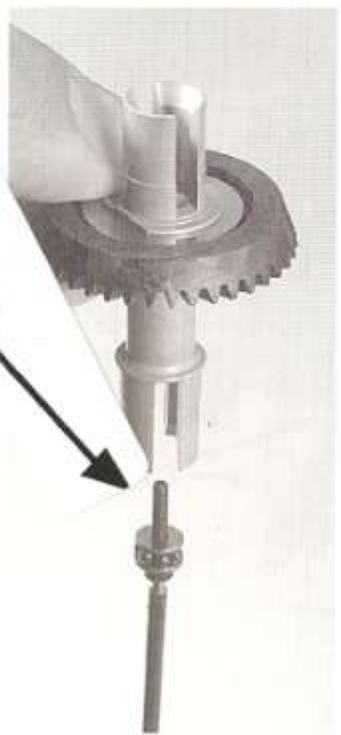


Thrust race



Adjust in small increments

Adjust the M2 screw at the centre of the diff. It should be JUST possible to make the gear slip.



Check for slip

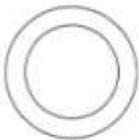
3a. Transmission Installation



X36AN (2)
Alloy bearing bush - front
(straight)



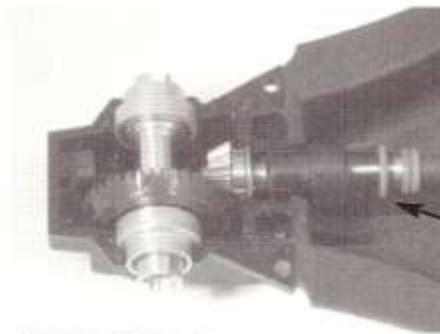
X36BN (2)
Alloy bearing bush - rear (angled)



X31CN (8)
Diff shim washer
(use as many as required)

Plus completed items...
(2) Differentials (from step 2b)

(4) 10x15x4 bearing



Front differential
installation
Note orientation

set-up tip

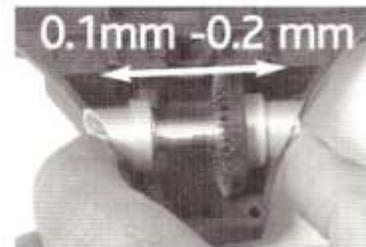
1 O-ring on brake collet



Rear differential
installation
Note orientation

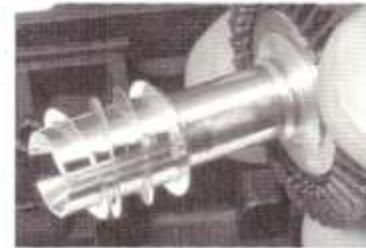
Shimming the diff

Step 1 - Check endfloat



Step 2 - Endfloat adjustment

Add shims here
(diff must still spin freely)



Step 3 - Gear clearance adjustment

Move shims from their position in
step one to here, if necessary, to
achieve a small amount of gear
clearance (similar to a motor
pinion/spur gear clearance)





X3AN (1)
Front gearbox top



X3BN (1)
Rear gearbox top



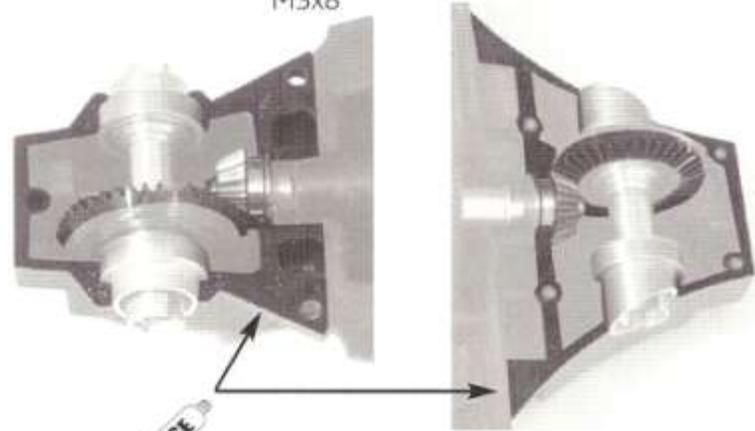
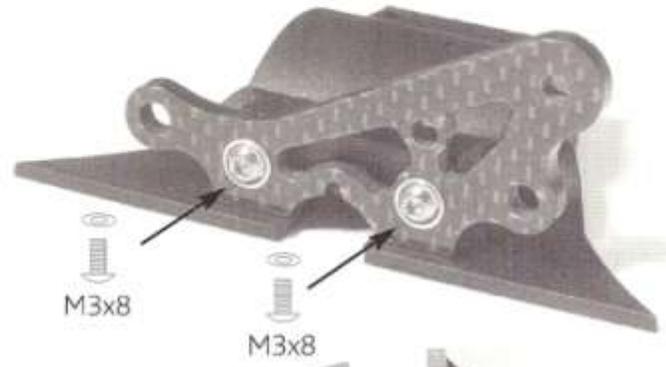
X32FX (1)
Small rear carbon plate

- (6) M3x8 socket button
- (2) M3x20 socket button
- (1) M3x25 socket c/s
- (2) M3 washers

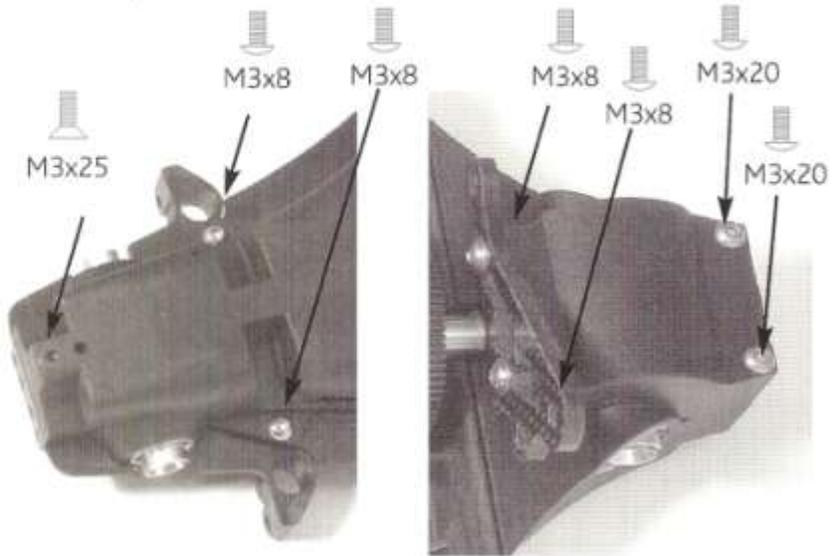
Build tip

After tightening the gearboxes into place, gently tap the differential from one side then the other to bed shims and bushes into position. (eg: use the plastic handle of a screwdriver)

3b. Gearbox tops



To lubricate gears & seal gearboxes.





X32EX (1)
large rear carbon plate



X18AX (2)
Rear wing mount



X34CN (1)
Anti-roll bar



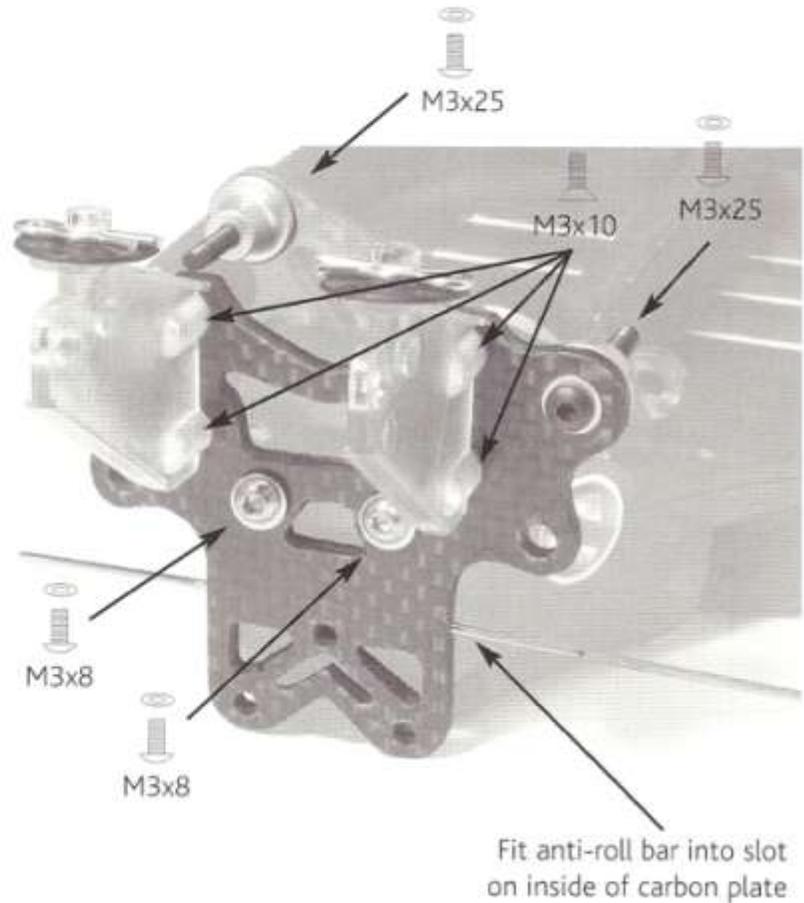
X4BN (2)
Alloy damper mounting spacer



X18BX (2)
Wing mount washer

- (2) M3x25 socket button
- (2) M3x8 socket button
- (4) M3x10 socket countersunk
- (4) M3 washer
- (2) Body clip

4. Rear Shock Mounts



Build tip

After tightening the screws, loosen them again by about 1 turn
(This will help in Step 6)



X39HX (2)
Upper rear wishbone - graphite



X5BN (2)
Rear rocker arm



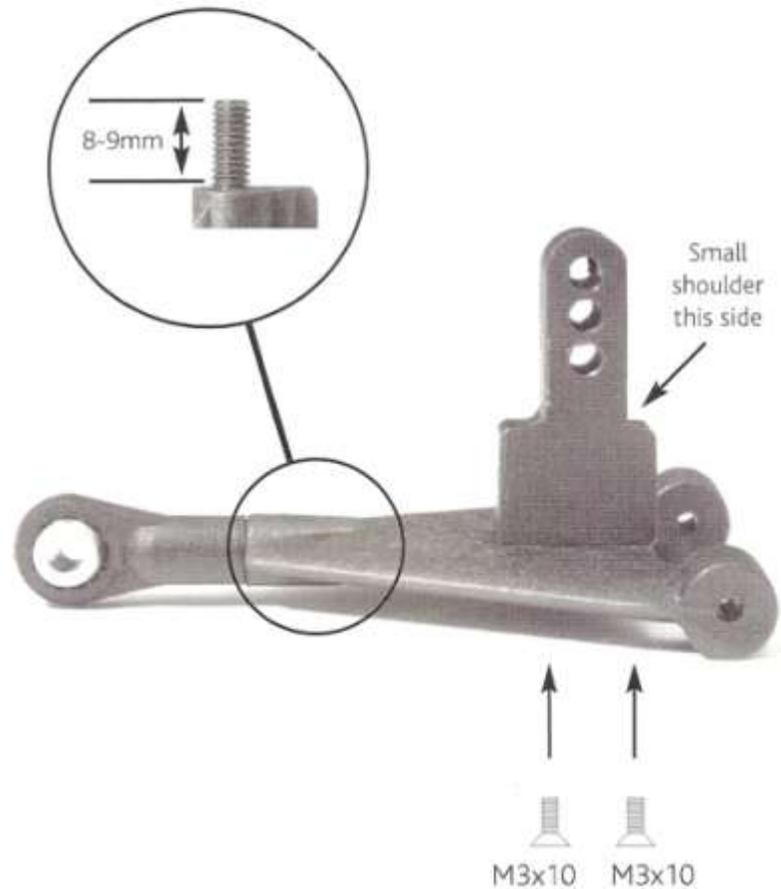
X6BN (2)
Long ball joint



X7BX (2)
Hard alloy flanged ball joint ball

- (2) M3x16mm stud
- (4) M3x10 socket countersunk

5a. Upper Rear Wishbone



Screw the socket stud into the wishbone leaving 8-9mm protruding, then screw the long ball joint onto it.

Build Tip

TIP : After tightening the rocker (M3x10), run some thin cyano glue around the edges of the Rocker Moulding where it meets the wishbone. This will ensure zero movement.

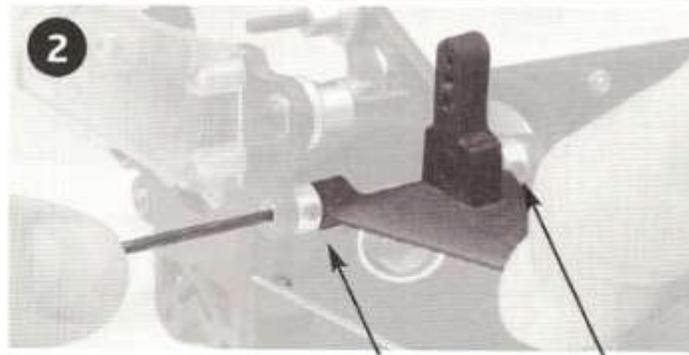


X5AX (4)
Upper pin mounting bushes

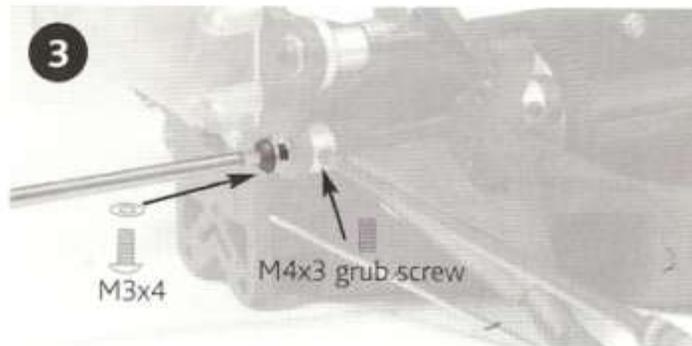
X5BX (2)
Upper rear suspension pins

- (4) M3x3 grub screw
- (4) M3x4 socket button
- (2) M2 washer (if required)
- (4) M3 washer

5b. Upper Rear Wishbone



Note : Use M2 washers here if necessary to reduce end float of the wishbone



NOW, tighten grub screws

GRUB SCREWS MUST FACE OUTWARDS AS SHOWN



X39GX (2)
Lower rear wishbone - graphite



X6AX (2)
Anti-roll bar, wishbone pick-up



X6DN (2)
Lower wishbone suspension pin



X36GN (2)
Bullet ball joint



X6BN (4)
Long ball joint

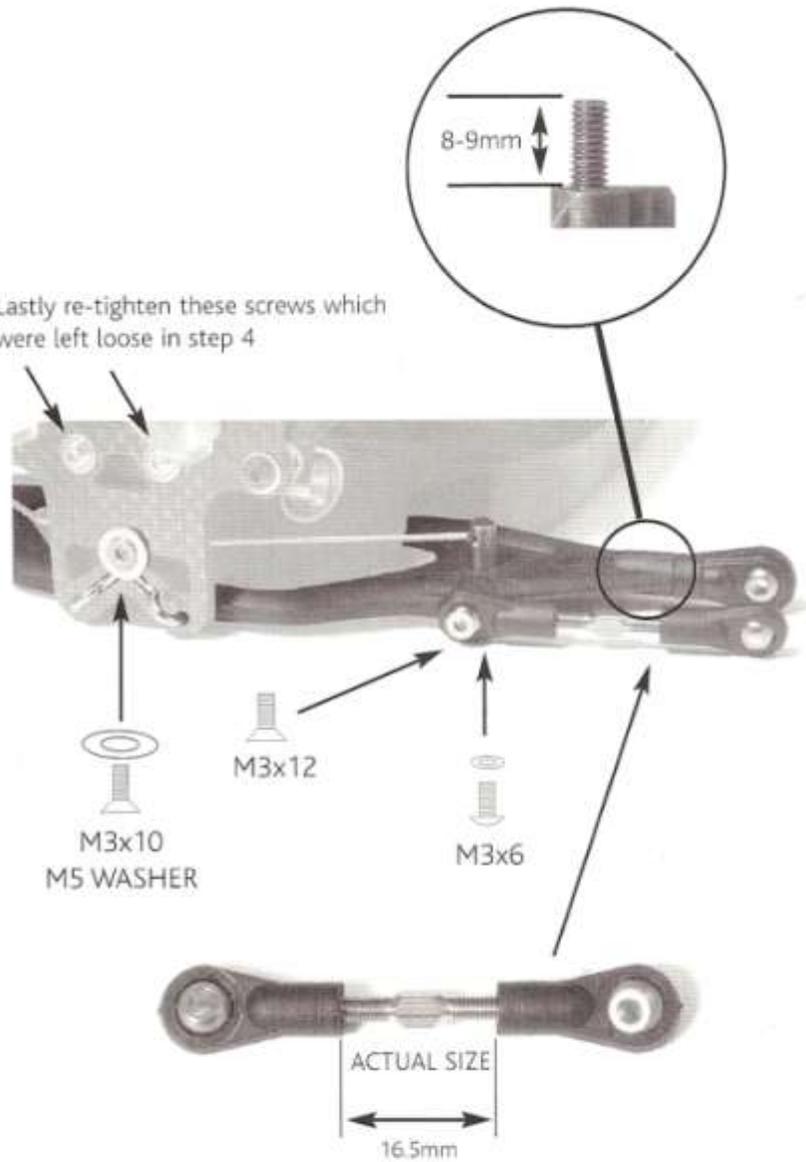


X6FN (2)
Rear toe link - titanium

- (6) Hard alloy ball joint ball
- (1) M5 washer
- (2) M3x12 socket countersunk screw
- (2) M3 washer
- (2) M4x16 Socket stud
- (1) M3x10 socket c/s screw
- (2) M3x6 socket button screw

6. Lower Rear Wishbone

Lastly re-tighten these screws which were left loose in step 4



Racer's tip

When fitting turnbuckles to the car, it is useful to have all right hand threads to the right of the car. This makes trackside adjustment of the car faster and more accurate.



X36HN (2)
Rear upright



X8XN (2)
Rear axle



X7HX (2)
Alloy rear wheel disc spacer



X7DN (2)
X Drive wheel disc



X9XN (2)
Bud drive pin



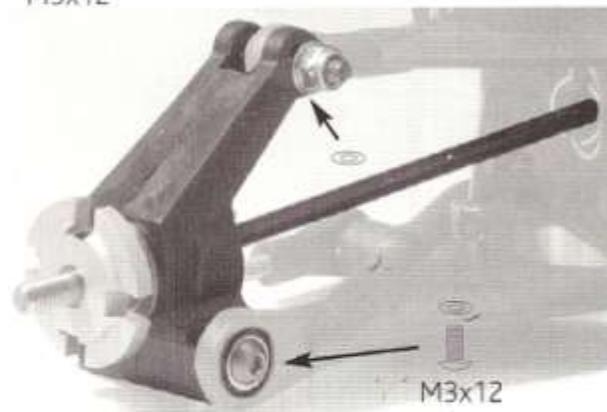
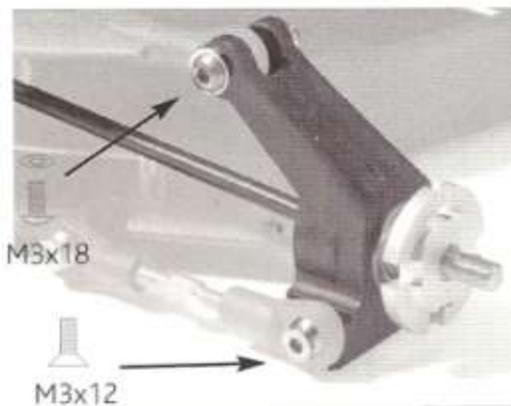
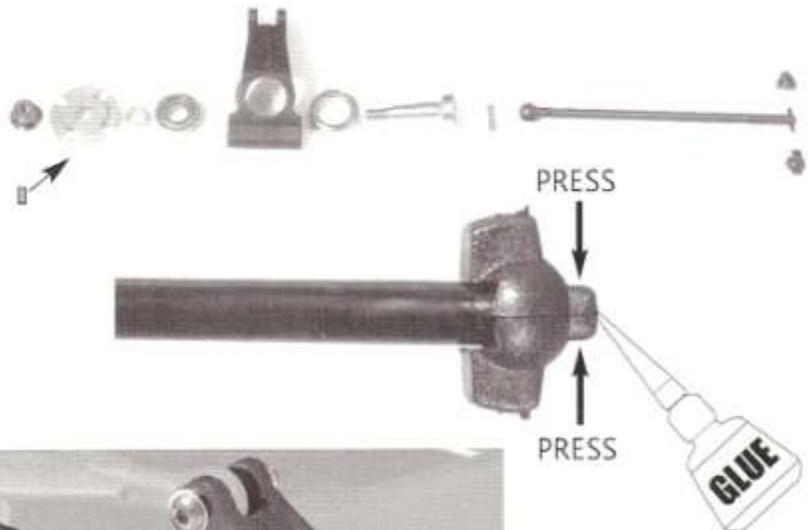
X7KZ (2)
"Bud" driveshaft



Driveshaft cap (4)

- (2) M3 nyloc nut
- (2) M3x12 socket button screw
- (2) M3x18 socket button screw
- (6) M3 washer
- (2) M3x12 socket countersunk screw
- (2) M4 flanged nylock nut
- (2) 10x15x4 stainless bearing
- (2) M3x4 grub screw
- (2) 6x12x4 flanged stainless bearing

7. Rear Upright Assembly



Set-up tip

For really top performance make sure that the suspension is free enough to fall under its own weight.

For High Grip Tracks (eg: fresh grass / astoturf)
Use the upper holes, for good stability

For Low Grip Tracks (eg: clay / loose surfaces)
Use the lower holes, gives more mid-corner steering.



X39FX (2)
Upper front wishbone graphite.



X32CX (1)
Front pivot pin mounting plate



X36GN (2)
Bullet ball joint



X11GN (2)
M4 pivot pin, threaded



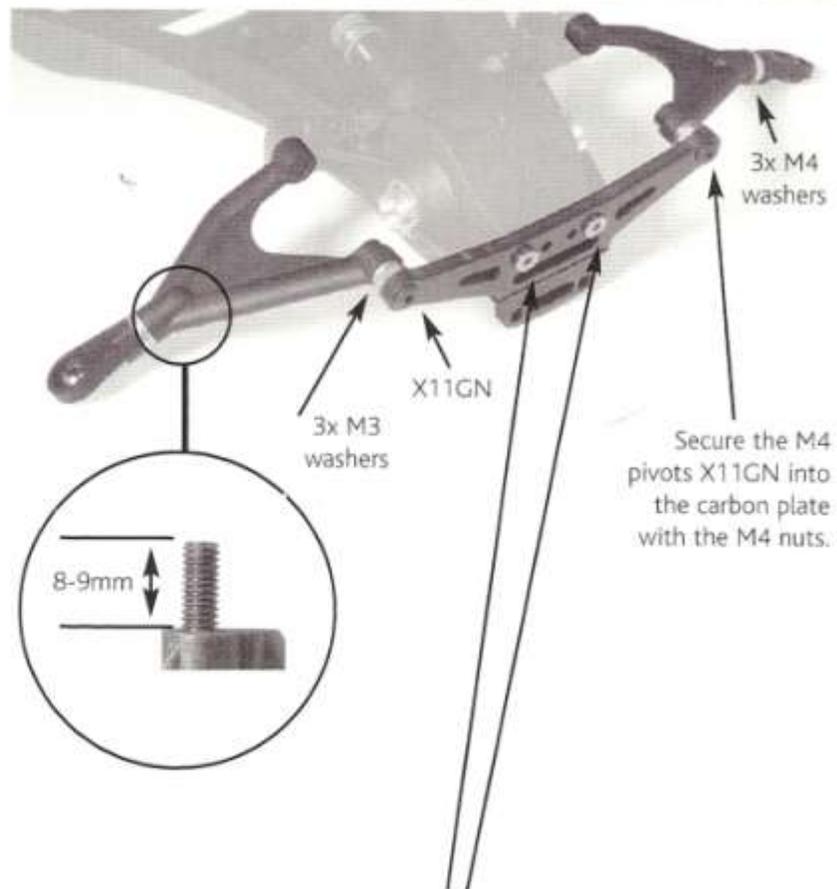
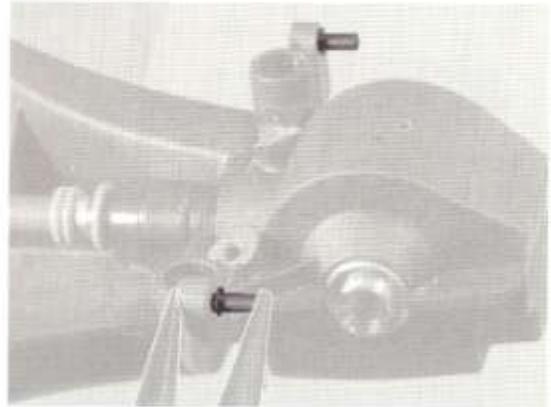
X11GS(2)
3mm pivot pin, gearbox lug

- (2) Hard alloy ball joint ball
- (6) M3 washer
- (6) M4 washer
- (2) M3x8 socket countersunk
- (2) M4x16 Socket stud
- (2) M4 nut

8. Upper Front Wishbone

Press the pivot pin X11GS into the gearbox lug (this should be a tight fit)

Secure the M4 pivots X11GN into the carbon plate with the M4 nuts.



Build Tip

After tightening the screws, loosen them again by about 1 turn (This will help in Step 10)

9. Steering Assembly



X9LX (1)
Alloy Steering Arm L



X9RX (1)
Alloy Steering Arm R (for clevis)



X9TX (2)
Delrin steering post x2



X12BN (1)
Carbon steering link

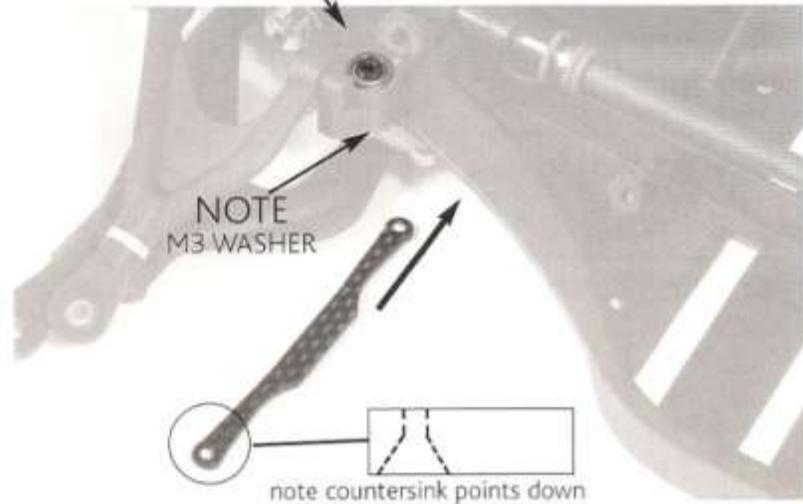


X12ES (2)
Hard alloy threaded balls



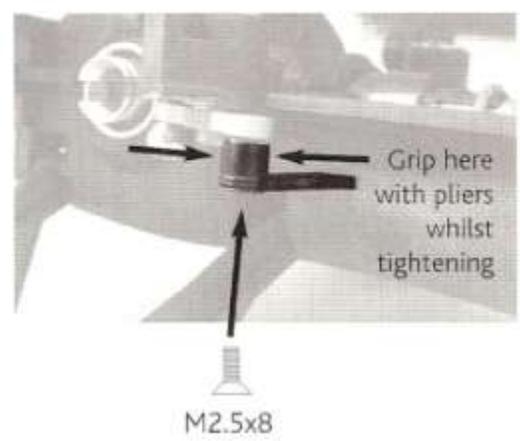
X9SX (2)
Steering shoulder screw

- (2) M3 washer
- (4) 5x8x3 flanged bearing
- (4) M2.5x8 countersink screw



Push the 8 x 4 bearings into the gearbox recesses and attach the alloy steering arms to the car using shoulder screws X9SX.

Slide the carbon link into the chassis c/s side down. Place the Delrin steering posts into the alloy steering arm, and attach them to the carbon link, using M2.5 c/s screws





X39EX (2)
Lower front wishbone - graphite



X36GN (2)
Bullet ball joint



X6DN (2)
Lower wishbone suspension pin



X6BN (8)
Long ball joint



X14EN (2)
50mm long turnbuckle



X10PX (2)
Push rod

(8) Ball joint ball
(2) M4x16 studs



X14AN (2)
Alloy rocker crank



X14CN (2)
M4 rocker crank pivot shaft

(2) M3 nyloc nut
(4) 4x8x3 flanged bearing
(4) M3x12 socket c/s screw

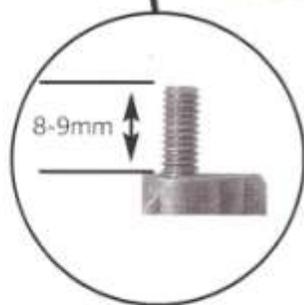
10. Lower Front Wishbone



Place only 1 ball into each track rod. The other end will clip onto the threaded ball, previously assembled to the steering arms



Once lower suspension pins are in place, Remember to re-tighten these screws which were left loose in step 8.



11. Rocker Cranks



CAUTION - NOTE ORIENTATION OF ROCKER CRANKS



X36IN (2)
Front upright



X16XN (2)
"BUD" stub-axle



X9XN (2)
"BUD" drive pin



X15KZ (2)
"BUD" driveshaft



X4DS (4)
Driveshaft cap moulding



X7DN (2)
X Drive wheel disc



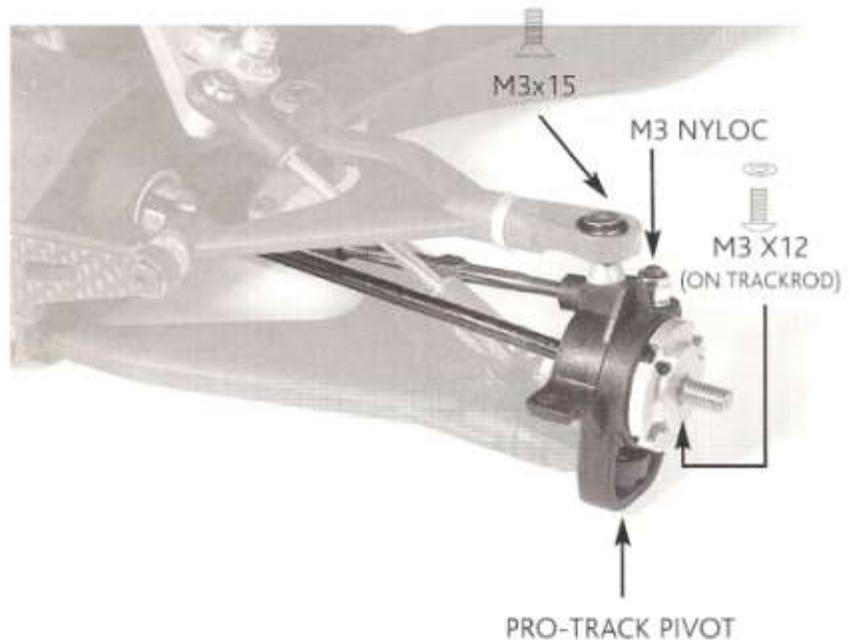
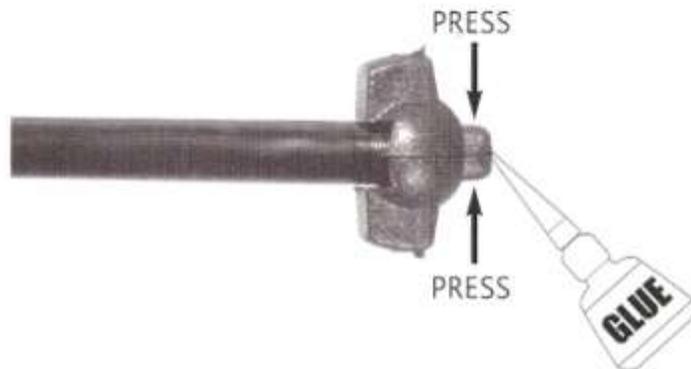
X12FS (2)
Pro-track steering pivot



X12EX (2)
Alloy upright top spacer

- (2) 6x12x4 flanged bearing
- (2) 10x15x4 bearing
- (2) M3x4 Grub screw
- (2) M3x15 socket c/s screw
- (2) M3x12 button screw
- (2) M4 flanged nyloc nut
- (2) M3 Nyloc nut

12. Front Upright & Assembly to Chassis



CAUTION: Screw in the Pro-track pivot, until the end of the pivot is about 1mm above the surface of the upright.

The Pro-track steering pivot screw, does not have to tighten. If you screw it too far in, you could crush the wheel bearing and damage it.



X20AN (1)
Motor mount clamp



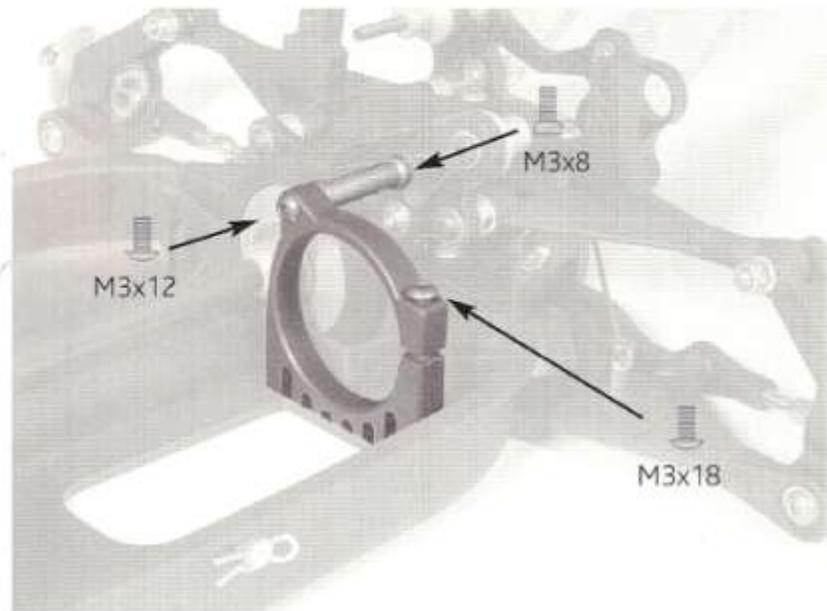
X20BN (1)
Motor mount disc



X20EN (1)
Motor mount brace tube

- (2) M3x10 x2 button screw
(to secure motor to disc)
- (2) M3x8 x2 c/s screws
- (1) M3x12 button screw
- (1) M3x8 hex head screw
- (1) M3x18 button screw

13. Motor Mounting



1. Attach the motor mount brace tube to the small rear shock mount, but do not fully tighten it yet.
2. Now secure the motor mount to the base of the chassis. Secure the brace tube to the motor mount using the M3x12 button screw.
3. Finally ... Tighten the hex headed screw.



M3x10 (steel)

M3x10 (steel)

14. Battery Location



X14AX (4)
Alloy battery post



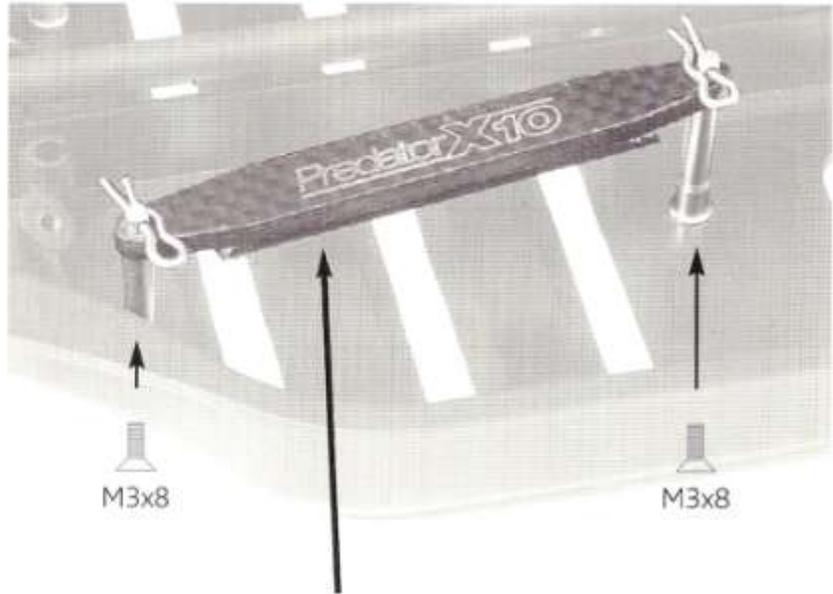
X14BX (2)
Carbon straps



X14CX (2)
Foam strip for battery straps

(4) M3x8 c/s screw

(4) Body clip



Affix foam strip to underside of carbon straps



X9RN (4)
Hard alloy damper body



X9SE (4)
Gold titanium nitrided damper rod



X9DN (2)
Machined piston. 2 hole, 2 groove (rear)



X9ON (2)
Machined piston. 1 hole, 2 groove (front)

X9FN (8)
3mm damper piston circlip (8)

X9HN (4)
White silicone 'O' ring



X6BN (4)
Long ball joint



X9SN (4)
Damper seal housing (4)



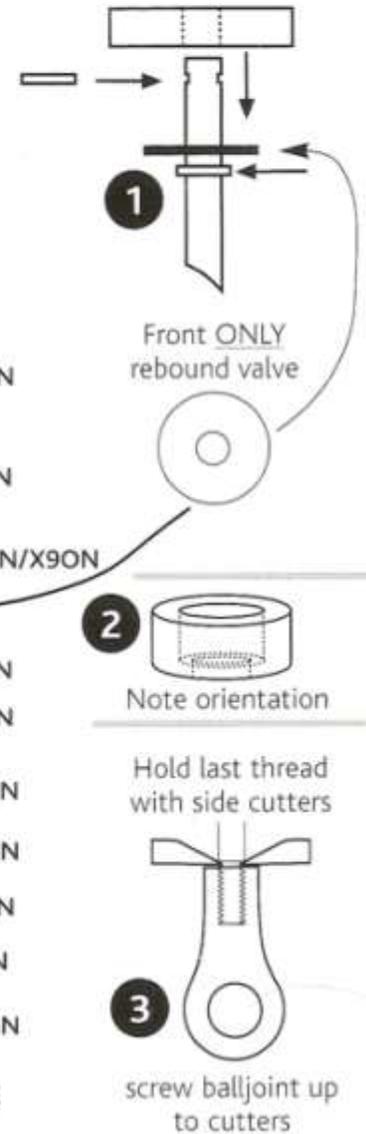
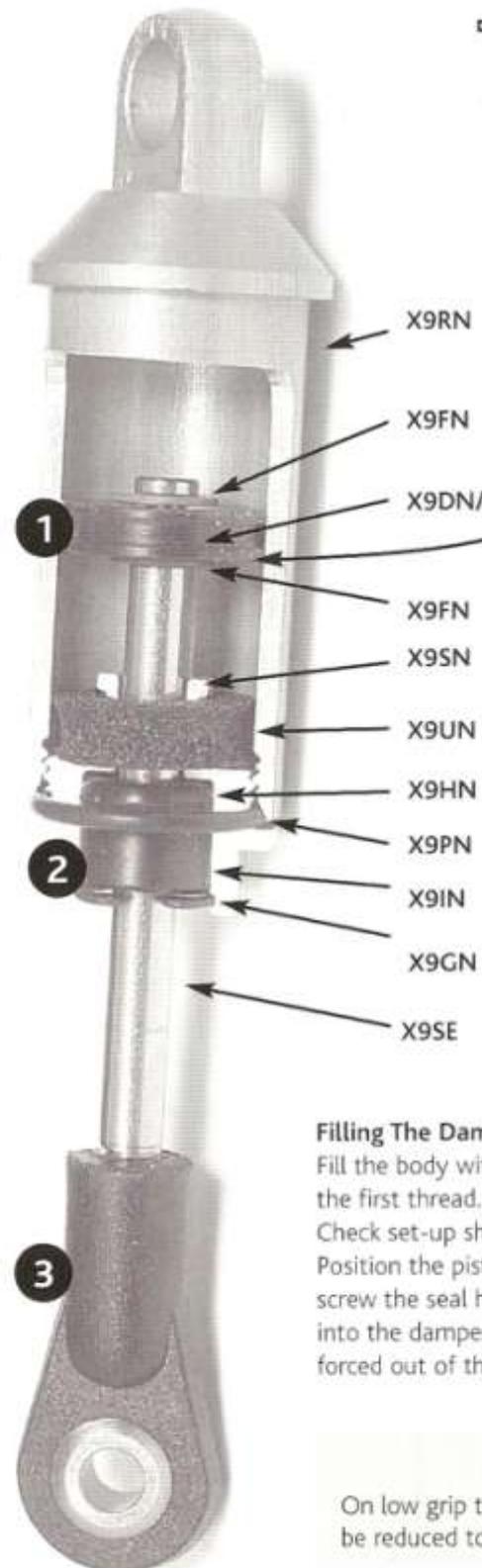
X9UN (4)
Volume compensator (4)

X9GN (4)
Large internal circlip

X9IN (4)
Bearing washer

X9PN (4)
9mm dia black O-ring

15. Damper Assembly



Filling The Damper with Oil :
Fill the body with pure silicone oil up to the first thread.
Check set-up sheet for oil weights.
Position the piston rod about halfway in and screw the seal housing/piston rod assembly into the damper body, allowing excess oil to be forced out of the body.

Set-up tip

On low grip tracks front oil weight can be reduced to increase front end grip.



X16AX (4)
Self aligning damper mounting bush



17EN (8)
1mm Ride height "c" clips
17FN (8)
3mm Ride height "c" clips
17GN (8)
5mm Ride height "c" clips



X15AX (2)
Delrin sliding spring platform



X9KN (4)
Spring platform washer



X9LN (4)
Slotted spring retainer

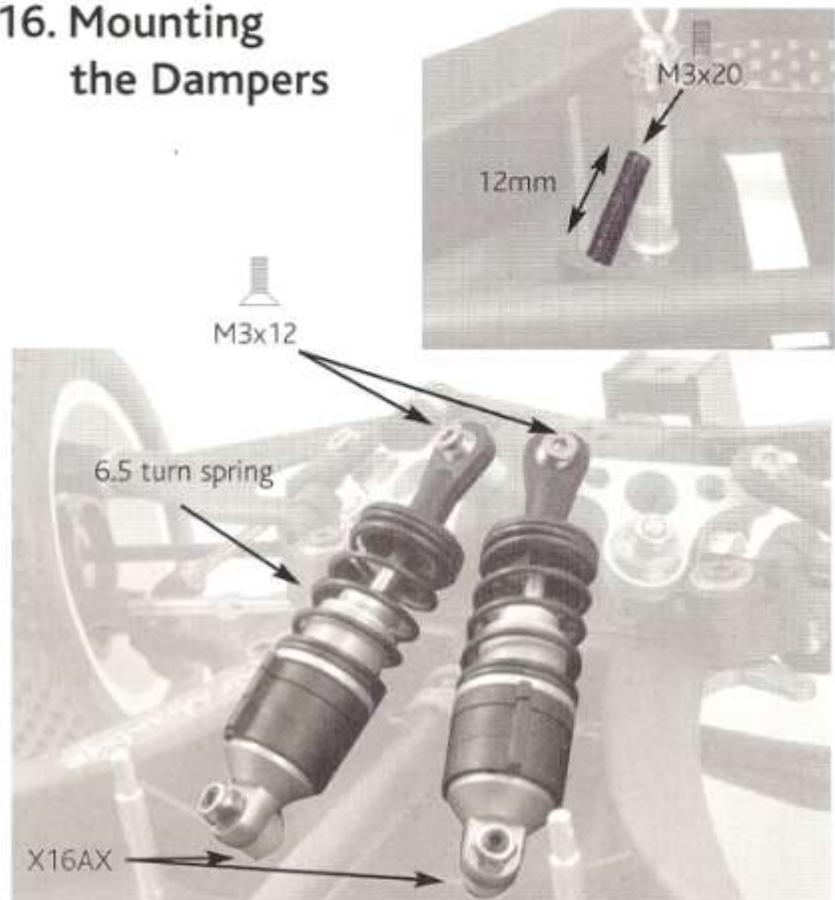
X9QN (2)
'P' springs, Gold (rear)

X9AX (2)
Coil springs, 6.5 turns (front)

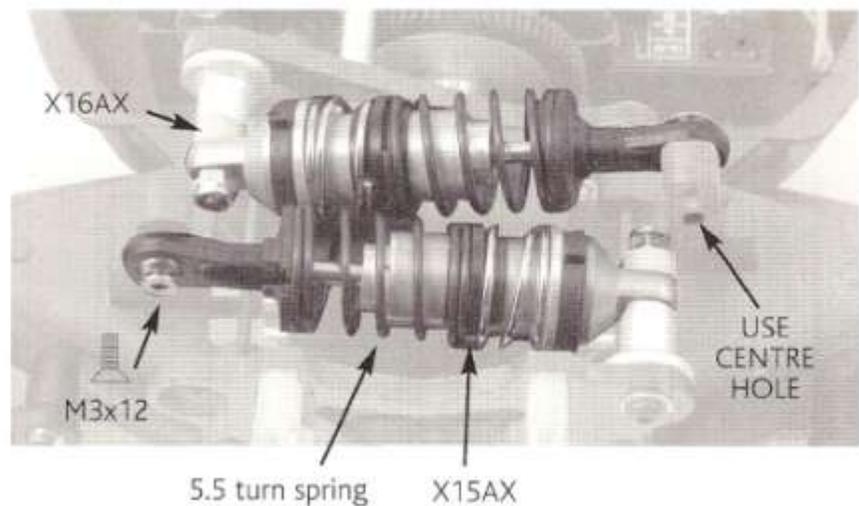
X9CX (2)
Coil spring, 5.5 turns (rear)

(4) M3 Nyloc nut
(4) M3x12 socket countersunk
(2) M3x16 stud
(2) M3x20 stud

16. Mounting the Dampers



TIP : Do not overtighten the M3 nut, which could crush the self aligning damper mounting. The damper must rotate freely around the bush



X25BX (1)

Body shell

X24AX (1)

Front wing

X24CX (1)

Rear wing



X248N (2)

Body side fixing mount



X20AX (1)

Nosecone

(2) Body clip

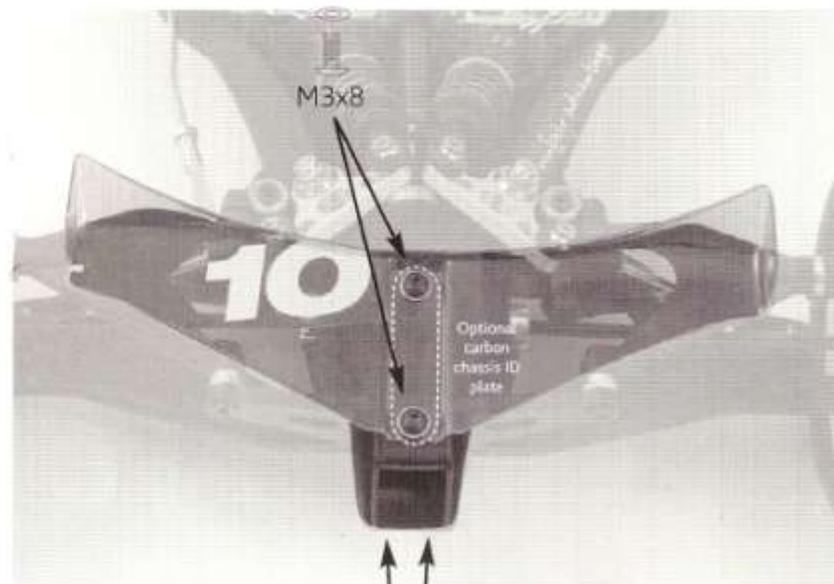
(2) M3x8 socket button screw

(2) M3x10 socket button screw

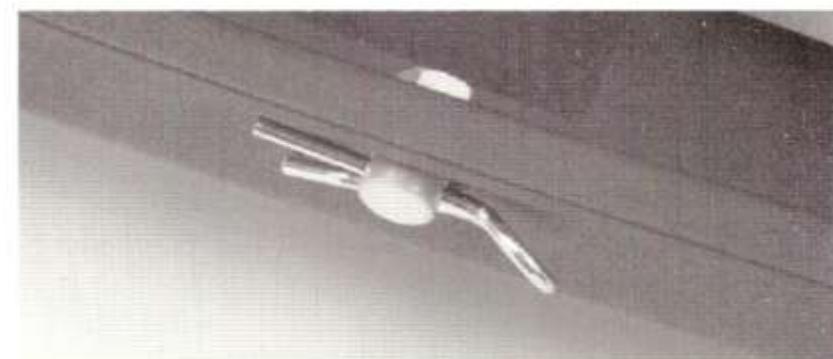
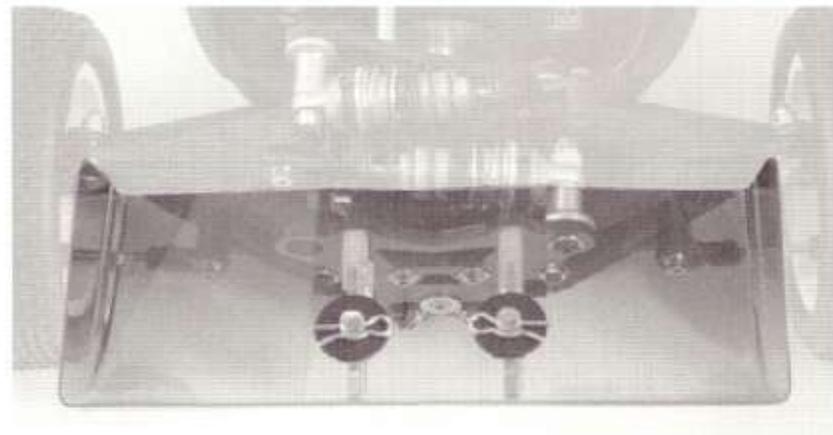
(2) M3 washers

(2) M3 slim nut

17. Nosecone & Wings



M3x10



17. Body



IMPORTANT
air intakes



X22AN (2)
Servo post

X29GS (1)
3mm servo link rod



X29FS (1)
Steel steering arm clevis



X12ES (1)
Threaded ball

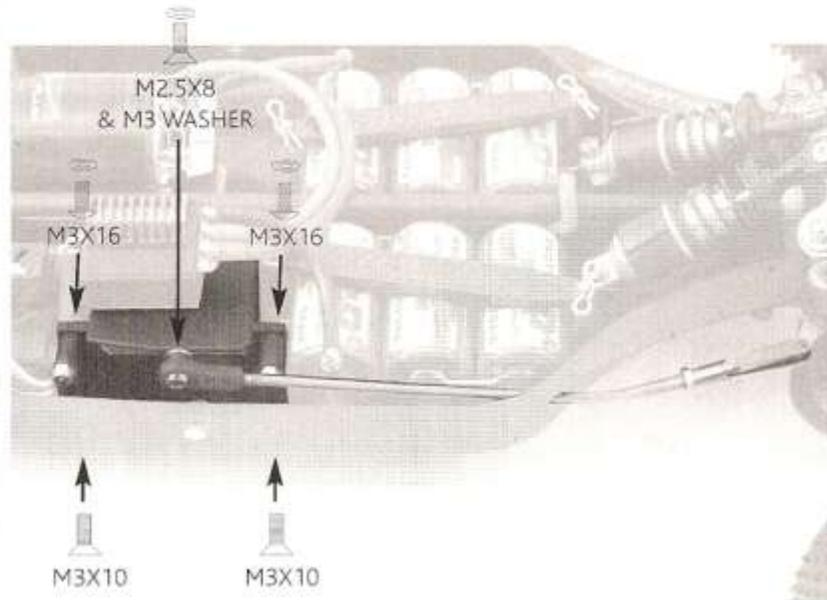


X6BN (1)
Long ball joint

X23AN (1)
Aerial tube
Heat shrink

- (2) M3x16 socket button
- (2) M3x10 socket c/s
- (3) M3 washer
- (1) M3 slim nut
- (2) M3 nyloc
- (1) M2.5x8 socket countersunk

18. Electrics' Installation



Build Tip

For extra solidity we recommend you also use servo tape under the servo.



Predator X10

Chassis Settings

High Grip

Low Grip

Track Type

Track Type	FlatTrack/Carpet		Astroturf		Fresh Grass		Worn Rutted Grass		Clay/Dirt		Clay/Dirt - Bumpy		Polished Floor	
	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear	Front	Rear
Springs	5.5T (Silver)	5.5 (Silver)	5.5T (Black)	5.5T (Silver)	5.5T (Black)	5.5T (Silver)	6.0T (Black)	5.5T (Silver)	6.5T (Black)	5.5T (Silver)	6.5T (Black)	5.5T (Silver)	6.5T (Black)	5.5T (Silver)
Pre-compression spring	None	None	None	Gold	None	Gold	None	Gold	None	Gold	None	Gold	None	Gold
Piston	Hard/Valve	Soft	Hard/Valve	Soft	Hard/Valve	Soft	Hard/Valve	Soft	Hard/Valve	Hard	Hard/Valve	Soft	Hard/Valve	Hard
Oil weight	45wt	55wt	35wt	55wt	35wt	50wt	30wt	50wt	30wt	40wt	30wt	60wt	20wt	40wt
Tie-in (per side)	Parallel	1 deg	Parallel	1 deg	Parallel	1 deg	Parallel	1.4 deg	Parallel	1.8 deg	Parallel	1.8 deg	1.8 deg (tor out)	2.2 deg
Camber (per side)	3 deg	2 deg	3 deg	2 deg	3 deg	2 deg	0 deg	1 deg	0 deg	1 deg	0 deg	1 deg	0 deg	0 deg
Castor (top wishbone pos)	Forward		Right back		Right back		Right back		Right back		Right back		Right back	
Ground clearance	7mm	10mm	10mm	22mm	16mm	22mm	10mm	22mm	16mm	22mm	16mm	22mm	16mm	22mm
Anti-roll bars/Pick up positions	Hard	Soft	Soft	Soft	Soft	Soft	None	Soft	None	Hard	None	Hard	Soft	Hard
Pick-up points														
Front Upright to upper wishbone	No spacer		Std spacer		Std spacer		Std spacer		Std spacer		Std spacer		Std spacer	
Rear Upright		Upper hole		Upper hole		Upper hole		Lower hole		Lower hole		Lower hole		Lower hole
Damper pick-up point		Middle		Middle		Middle		Middle		Middle		Middle		Middle
Powertrain Details														
Motor		10 turn		10 turn		10 turn		11 turn		11 turn		11 turn		10 turn
Speed Controller Setting		Max		Max		Max		Max		Max		Max		Max
Front brake balance		3x O-ring in collet		3x O-ring in collet		2x O-ring in collet		0x O-ring in collet		1x O-ring in collet		0x O-ring in collet		3x O-ring in collet
Pinion		17		19		19		20		21		21		15
Spro gear		73		73		73		73		73		73		73
Gearbox internal ratio		2.44 to 1		2.44 to 1		2.44 to 1		2.44 to 1		2.44 to 1		2.44 to 1		2.44 to 1
Overall Ratio		10.47		9.37		9.37		8.90		8.47		8.47		11.86