

BETA EDITION 1.0

ASSEMBLY GUIDE

**CATERHAM**



## **CATERHAM** ASSEMBLY GUIDE

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B E T A E D I T I O N 1 . 0

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### **FOR EVALUATION PURPOSES ONLY**

Whilst every effort has been made to ensure the information in the following pages is accurate; this beta version of Assembly Guide is published to gain feedback on the layout and principle only.

Please address any comments to: [assemblyguide@caterham.com](mailto:assemblyguide@caterham.com)

21 July 2016

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## HINTS & TIPS

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*When using a torque wrench, listen/feel the click and then stop. It does not need to be any tighter and you might actually weaken the fixing by 'over-torquing' it. Always wind your torque wrench setting back to free when you've finished with it.*

**John K**

*A 'nyloc' nut is one with a nylon insert that gets cut by the bolt thread, making it resistant to unwinding itself. This means that they should not be repeatedly re-used.*

**Chris B**

*1Nm of torque equals 0.736lbft.*

**Mick F**

*When using a spanner, always use the ring end wherever possible. The open end is really only for those times that access is too limited for a ring spanner or socket.*

**Mick A**

*A 'spring washer' has a split in it and squashes up closed when a fixing is tightened. It is usually used under a bolt head to help resist it coming undone.*

**John S**

*A 'caphead bolt' has a circular head with a hexagonal drive inside it. It is tightened with an allen key or hex drive socket. Capheads are useful where there is limited space around the head for a spanner or socket. They look nice too!*

**John K**

## HINTS & TIPS

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*You can tell if you have 'wide track suspension' car by looking at the front dampers. Wide track has a 25mm long hexagonal spacer between the top spring retainer and the mounting bush.*

**Matt T**

*Generally, metric Nyloc nuts have a blue nylon insert and imperial ones a white nylon insert.*

**Grant P**

*Thread lock is used to stop something coming undone, but it only needs a little drop on the thread to be effective.*

**Jamie A**

*A bolt size is described by its diameter (eg M10=10mm) by the length not including the head (eg 65mm).*

**James A**

*Left and right are as viewed from the driver's seat.*

**Harrison P**

*Teabag, boiling water, then the milk, in that order.*

**Simon L**

# KEY

## SYMBOLS

**1** Item number

**AA**  
**AJ**  
**AM** Fixing item

**S** **R** S Pack / R Pack specific instructions

**Nm** Required torque (where applicable)

**S3**  
**S5** S3 / S5 chassis specific instructions

**x2** Repeat on both sides



Advice from factory professionals

## FIXINGS

Pack <b>A</b>		<b>CATERHAM</b>		44	
				PACK NUMBER	
				30F015B	
FRONT SUSPENSION DeDION CARS (METRIC)					
This pack may include extra fasteners to cover different options					
ITEM	BASIC DESCRIPTION	PART NUMBER	QTY	USED ON	ILLUSTRATION
1	AA Bolt M12 x 100 Grade 10.9	BM12X100	2	Lower wishbone rear	
2	AB Bolt M12 x 65 Grade 10.9	BM12X65	2	Lower wishbone front	
3	AC Bolt M10 x 65 Grade 10.9	BM10X65	2	Upper wishbone rear	
4	AD Bolt M10 x 60 Grade 10.9	BM10X60	2	Upper wishbone front	
5	AE Bolt M8 x 40 Grade 10.9	BM8X40	4	Anti-roll bar mounting brackets	
6	AF Plain Nut M14 x 1.5 Thread	NM14	1	Temporary use to help lock upper wishbone ball joint	
7	AG Nyloc Nut M12	NM12	2	Lower wishbone rear	
8	AH Nyloc Nut M10	NM10	4	Upper wishbone	
9	AJ Plain Washer M12 Cheeked	WP12M12	18	Lower wishbone	
10	AP Plain Washer for mounting brackets	WP10A	4	Anti-roll bar mounting brackets	
11	AL Plain Washer for mounting brackets	WP10B	2	Stake pin	

ITEM	BASIC DESCRIPTION	PART NUMBER	QTY	USED ON	ILLUSTRATION
1	AA Bolt M12 x 100 Grade 10.9	BM12X100	2	Lower wishbone rear	

x4 ← (Indicates number of each fixing required)

← (Greyed out area indicates fixings are not required for current step)

# KEY

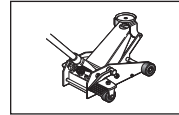
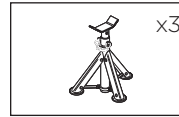
## TOOLS

	Allen key		Grease		Pop rivet gun		Socket wrench		Thread lock
	Assistance		Hammer		Power adhesive		Socket wrench (allen)		Torque wrench
	Axle stand		Heat gun		Pozidrive screwdriver		Spirit level		Trolley jack
	Combination spanner		Junior hacksaw		Pozidrive screwdriver (stubby)		Spray lube		WD40
	Copper slip		Latex gloves		Reading manual		Stanley knife		Tool
	Drill		Long nose pliers		Scissors		Sticky tape		Tool
	Drill bit		Mallet		Side cutters		Super glue		Tool
	Flat dzuz screwdriver		Marker pen		Silicon		Tap wrench		Tool
	Flat head screwdriver		Muscle		Silicon gun		Tape measure		Tool

# LETS GET READY

## PARTS

## TOOLS



## FIXINGS

## TIPS

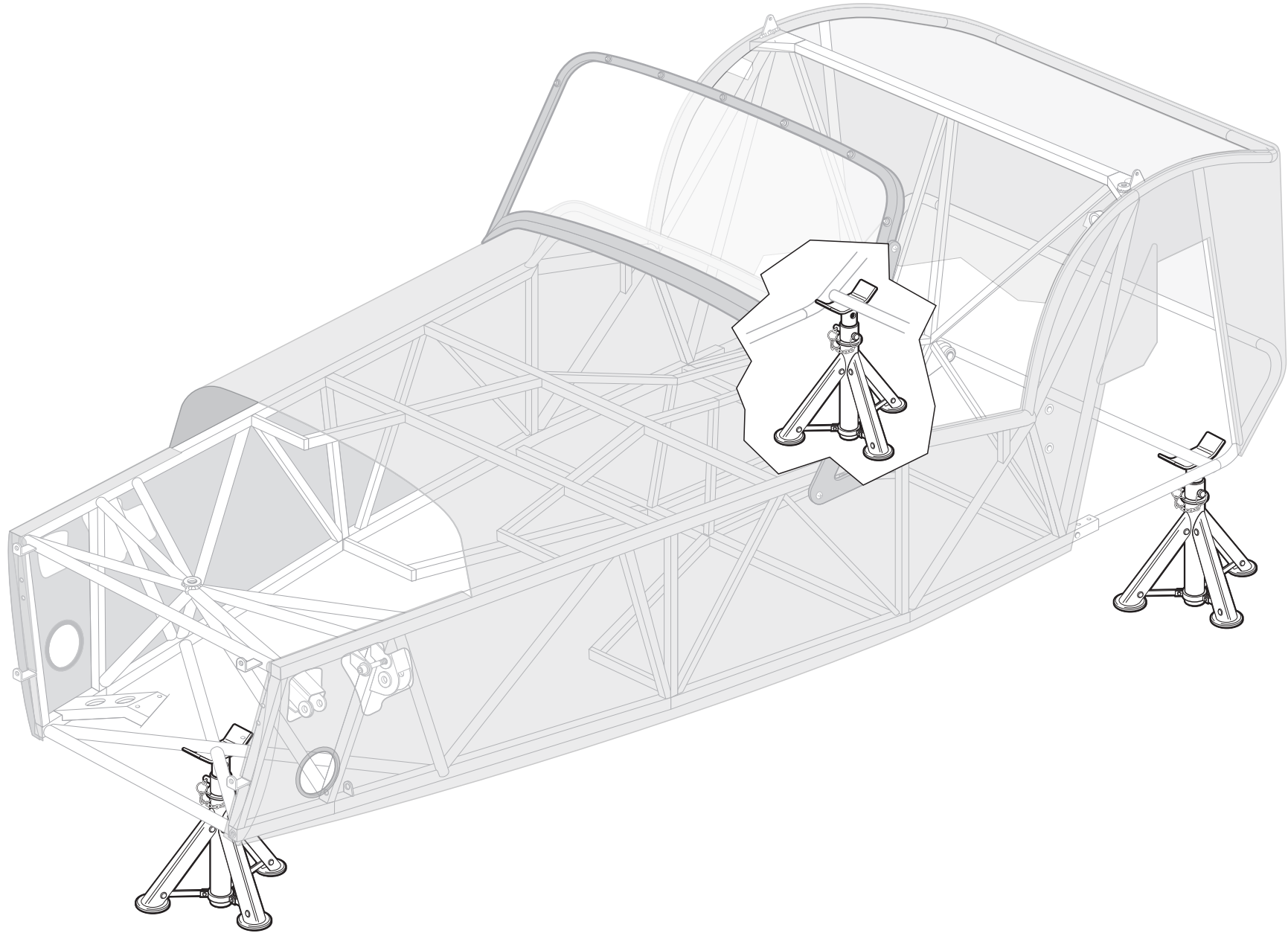
*When deciding how high your axle stands should be (the higher the better for working on), don't forget that a complete car will need to come down off them, so make sure your trolley jack can reach and lift the height you set them too!*

**Mick F**

*Some tape or foam on the top of the axle stands will stop them scratching the chassis.*

**Matt T**



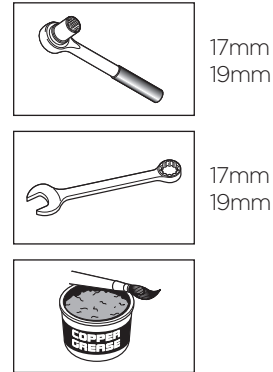


# START WITH THE SUSPENSION WISHBONES

## PARTS

- 1 Lower wishbone
- 2 Upper wishbone
- 3 Wishbone bush sleeve

## TOOLS



## FIXINGS

Pack A		CATERHAM		44	
		PACK NUMBER		30F015B	
FRONT SUSPENSION DeDION CARS (METRIC)					
This pack may include extra fasteners to cover different options					
ITEM	BASIC DESCRIPTION	PART NUMBER	QTY	USED ON	ILLUSTRATION
1	Bolt M12 x 100 Grade 10.9	BM12X100	2	Lower wishbone rear	
2	Bolt M12 x 65 Grade 10.9	BM12X65	2	Lower wishbone front	
3	Bolt M10 x 65 Grade 10.9	BM10X65	2	Upper wishbone rear	
4	Bolt M10 x 60 Grade 10.9	BM10X60	2	Upper wishbone front	
5	Anti-roll bar mounting brackets	BM040	4	Anti-roll bar mounting brackets	
6	Flan Washer M12 x 1.0 thread	WPCM12	1	Temporary use to fit the lower wishbone ball joint	
7	Nylon Nut M12	NMVF12	2	Lower wishbone rear	
8	Nylon Nut M10	NMVF10	4	Upper wishbone	
9	Flan Washer M12 (Dished)	WPCM12	18	Lower wishbone	
10	Anti-roll bar mounting brackets	BM040	4	Anti-roll bar mounting brackets	
11	Flan Washer 1/2" x 1/2" (hard steel)	WPC012	2	Brake pipe	

Pack A		CATERHAM		44	
		PACK NUMBER		30F015B	
FRONT SUSPENSION DeDION CARS (METRIC)					
This pack may include extra fasteners to cover different options					
ITEM	BASIC DESCRIPTION	PART NUMBER	QTY	USED ON	ILLUSTRATION
12	Spring Washer M12	WISHM12	2	Lower wishbone front	
13	Spring Washer M10	WISHM10	4	Wishbone mounting brackets & upper damper support	
14	Flan Washer 1/2" (hard steel)	WPC012	2	Brake pipe	
15	Nylon Nut 1/2" (hard steel)	NMVF12	2	Wing stay	
16	Nylon Nut 1/2" (hard steel)	NMVF12	2	Front brake, spring mounting (old track only)	

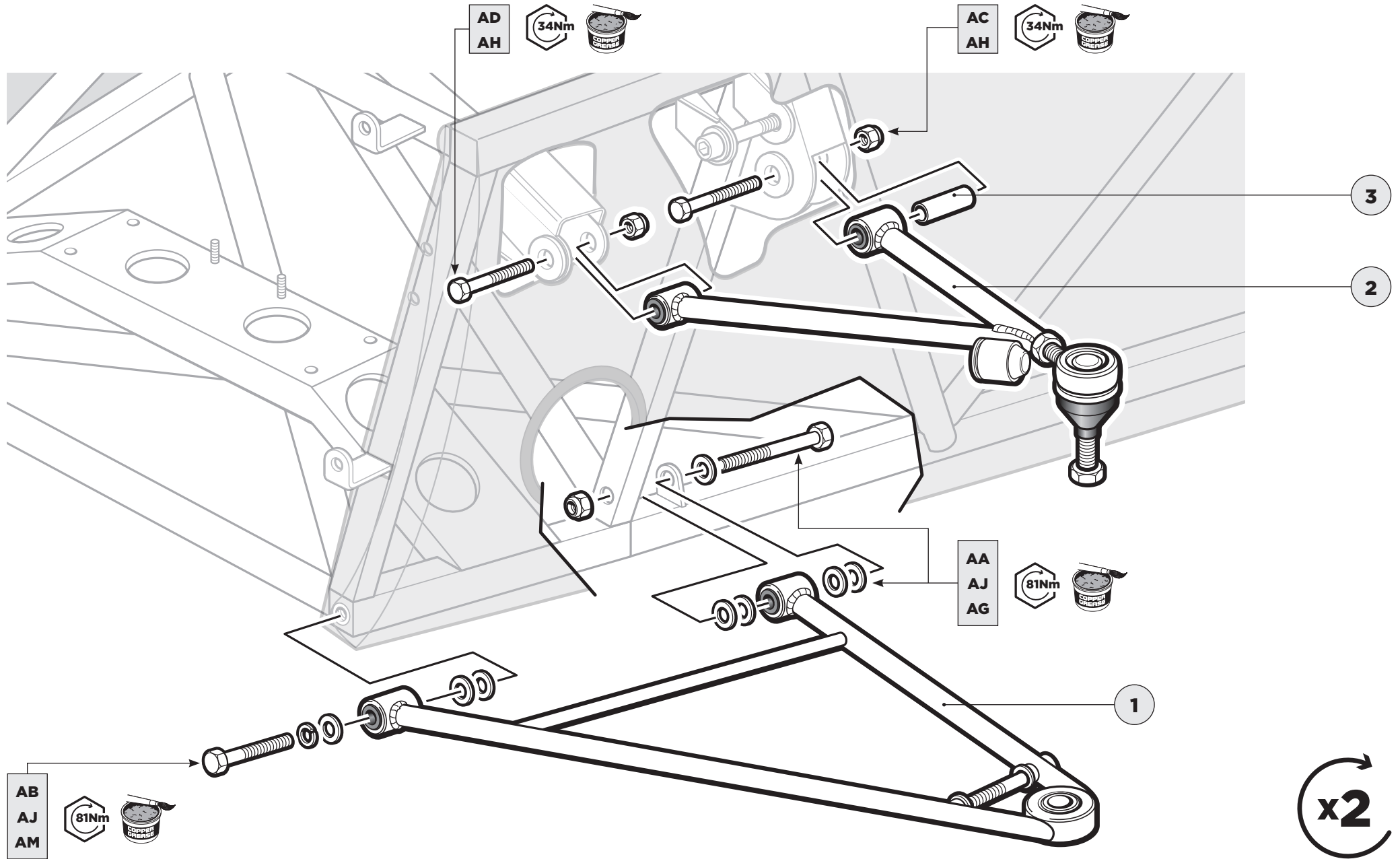
Drawings are for illustrative purposes only and are not to scale. Page 2 of 2

## TIPS

For now, only tighten the nuts/bolts lightly and then torque them up when the car is finished and on the ground. This sets the bushes correctly and ensures the best handling.

Harrison P

# START WITH THE SUSPENSION WISHBONES

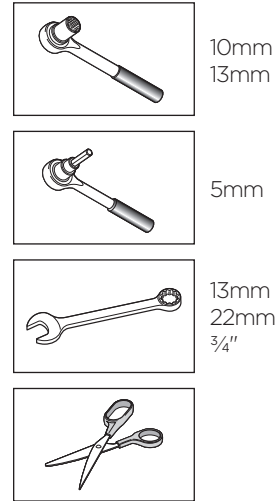


# NOW FOR THE STEERING RACK

## PARTS

- 1 Steering rack
- 2 Rack clamps
- 3 Column universal joint
- 4 Track rod end
- 5 IVA cover

## TOOLS



## FIXINGS

Pack B		CATERHAM		55	
		PACK NUMBER		305003B	
STEERING DeDION CARS (METRIC)					
This pack may include extra fasteners to cover different options					
ITEM	BASIC DESCRIPTION	PART NUMBER	QTY	USED ON	ILLUSTRATION
1	BA Clamped Bolt M8 x 70 DIN 913	BAC48070	4	Rack clamps	
2	BG Bolt M8 x 16 DIN 913	BG16016	2	Column clamp	
3	BC Bolt M6 x 25 DIN 913	BMC035	2	Column to rack universal joint	
4	BE Plain Nut M8	BNP012	1	Steering wheel boss	
5	BE Plain Nut M7	BNP012	2	Track rod lock nut	
6	BE Plain Nut M8	BNP012	1	Column clamp grub screw locknut	
7	BG Nyloc Nut M8	BNM09	2	Column to rack universal joint	
8	BH Nyloc Nut M8	BNM09	4	Steering rack clamps	
9	BE Plain Washer M8 x 10	BNP012	1	Steering wheel boss	
10	BK Plain Washer Heavy duty	BNP014	6	Rack clamps and column clamp	
11	BL Safety Washer Heavy duty	BNP014	2	Column clamp	

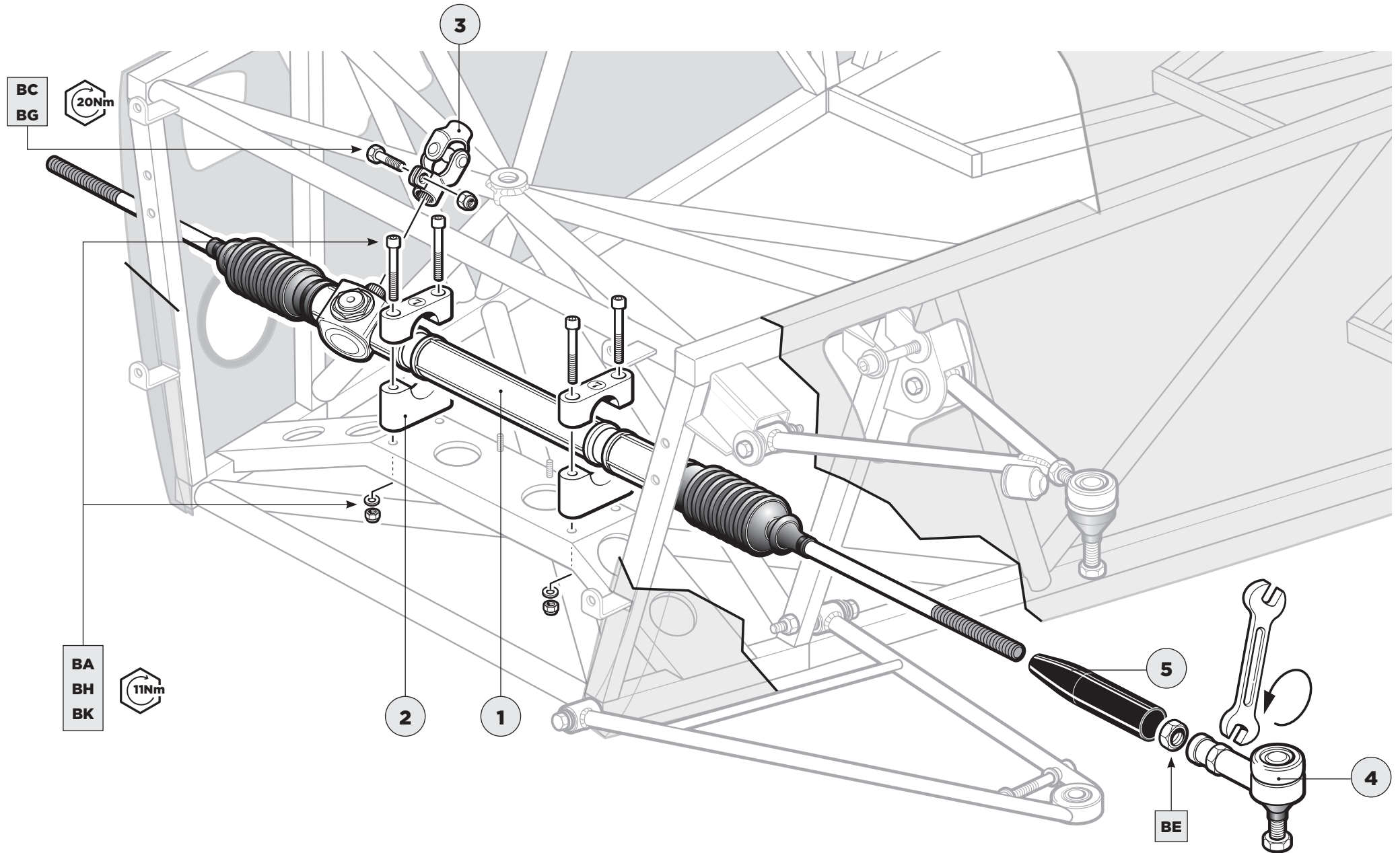
Drawings are for illustrative purposes only and are not to scale. Page 1 of 1

## TIPS

*Finding the right IVA cover isn't obvious because it is effectively a long cap. To use it, you cut the closed end off.*

**Jamie A**

# NOW FOR THE STEERING RACK

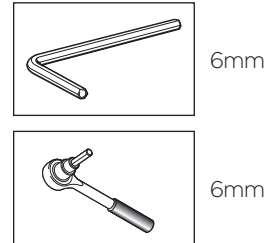


# AND THEN THE DAMPERS

## PARTS

- 1 Spring / damper
- 2 Lower damper eyelet
- 3 Upper damper eyelet

## TOOLS



## FIXINGS

Pack A		CATERHAM		44	
		PART NUMBER		39F015B	
FRONT SUSPENSION DeDION CARS (METRIC)					
This pack may include extra fasteners to cover different options					
ITEM	BASIC DESCRIPTION	PART NUMBER	QTY	USED ON	ILLUSTRATION
1	AA Bolt M12 x 100 (Metric)	BA72110	2	Lower wishbone plate	
2	AG Bolt M12 x 65 (Metric)	BA72109	2	Lower wishbone front	
3	AG Bolt M12 x 65 (Metric)	BA72109	2	Upper wishbone rear	
4	AG Bolt M12 x 65 (Metric)	BA72109	2	Upper wishbone front	
5	AE Bolt M8 x 40 (Metric)	BA6840	4	Anti-roll bar mounting brackets	
6	AF Flank Nut M14 x 1.5 Thread	BA9F14	1	Temporary use to help lock upper wishbone ball joint	
7	AG Nut M12	BA9F12	2	Lower wishbone plate	
8	AM Nut M10	BA9F10	4	Upper wishbone	
9	AJ Flank Washer M12 (Metric)	BA9F012	18	Lower wishbone	
10	AK Flank Washer M8 (Metric)	BA9F08	4	Anti-roll bar mounting brackets	
11	AL Flank Washer 12 x 12 (Metric)	BA9F012	2	Brake pipe	

Drawings are for illustrative purposes only and are not to scale. Page 1 of 2

Pack A		CATERHAM		44	
		PART NUMBER		39F015B	
FRONT SUSPENSION DeDION CARS (METRIC)					
This pack may include extra fasteners to cover different options					
ITEM	BASIC DESCRIPTION	PART NUMBER	QTY	USED ON	ILLUSTRATION
12	AM Spring Washer 10	WA9M10	2	Lower wishbone front	
13	AN Spring Washer 16	WA9M16	6	Anti-roll bar mounting brackets & upper damper mount	
14	AP Flank 12 Brake pipe	WA9B12	2	Brake pipe	
15	AR Nut M12 (Metric)	BA9F12	2	Wing stay	
16	AS Nut M12 (Metric)	BA9F12	2	Front brake upright mounting (old track (16, 17))	

Drawings are for illustrative purposes only and are not to scale. Page 2 of 2

Other fixings provided in chassis & wishbone.

x2

## TIPS

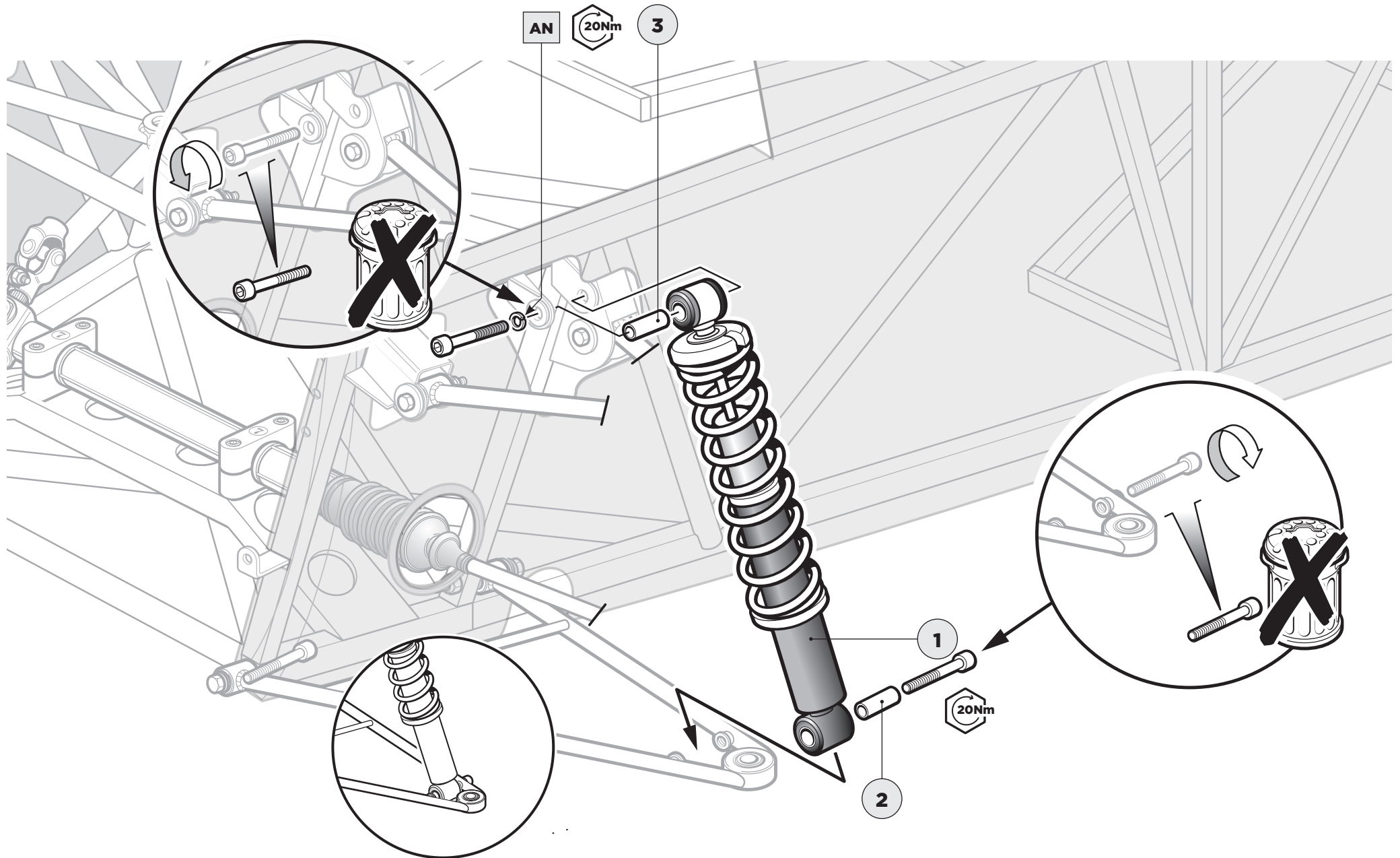
Put the top of the damper on first.

Grant P

The bottom can be a tight fit!

Mick F

## AND THEN THE DAMPERS

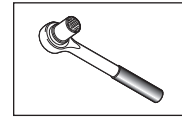


# IT'S TIME FOR THE WINGSTAYS

## PARTS

- 1 Wingstay
- 2 Front brake & upright assembly

## TOOLS



22mm  
3/4"

## FIXINGS

Pack A		CATERHAM		44	
		PACK NUMBER		39F015B	
FRONT SUSPENSION DeDION CARS (METRIC)					
This pack may include extra fasteners to cover different options					
ITEM	BASIC DESCRIPTION	PART NUMBER	QTY	USED ON	ILLUSTRATION
1	Ball Nut 12 x 45 (Metric)	86722100	2	Lower wishbone rear	
2	Ball Nut 12 x 45 (Metric)	86722095	2	Lower wishbone front	
3	Ball Nut 12 x 45 (Metric)	86722090	2	Upper wishbone rear	
4	Ball Nut 12 x 45 (Metric)	86722095	2	Upper wishbone front	
5	Ball Nut 40 x 40 (Metric)	868040	4	Anti-roll bar mounting brackets	
6	Plain Nut M12 x 1.5 Thread	868914	1	Temporary use to keep track system adjustment ball joint	
7	Nyloc Nut M12	868912	2	Lower wishbone rear	
8	Nyloc Nut M12	868910	4	Upper wishbone	
9	Plain Washers M12 (Metric)	86730102	18	Lower wishbone	
10	Plain Washers M12 (Metric)	86730103	4	Anti-roll bar mounting brackets	
11	Plain Washers 12 x 12 (Metric)	86730105	2	Brake pipe	

Drawings are for illustrative purposes only and are not to scale. Page 1 of 2

Pack A		CATERHAM		44	
		PACK NUMBER		39F015B	
FRONT SUSPENSION DeDION CARS (METRIC)					
This pack may include extra fasteners to cover different options					
ITEM	BASIC DESCRIPTION	PART NUMBER	QTY	USED ON	ILLUSTRATION
12	Spring Washer 12	86730111	2	Lower wishbone rear	
13	Spring Washer 12	86730108	4	Lower wishbone front	
14	Plain 12" Brake pipe	868303	2	Brake pipe	
15	Nyloc Nut 12" Half-nut	86730104	2	Wing stay	
16	Nyloc Nut 12" Full-nut	86730102	2	Front brake, upright mounting (std track ONLY)	

Drawings are for illustrative purposes only and are not to scale. Page 2 of 2

x2  
x2

## TIPS

The drilled hole is for the side repeater earth that we'll fit later. It's easier to drill from the top and down through both sides of the tube, rather than through one side from the bottom (where the earth will be fixed).

**Tiago O**

Some of the fixings required and shown on the drawings, such as the ball joint nut, are already on the part and not in the fixing pack.

**Anthony L**

Use the plain nut to pull the top ball joint home before using a nyloc, otherwise the thread will spin.

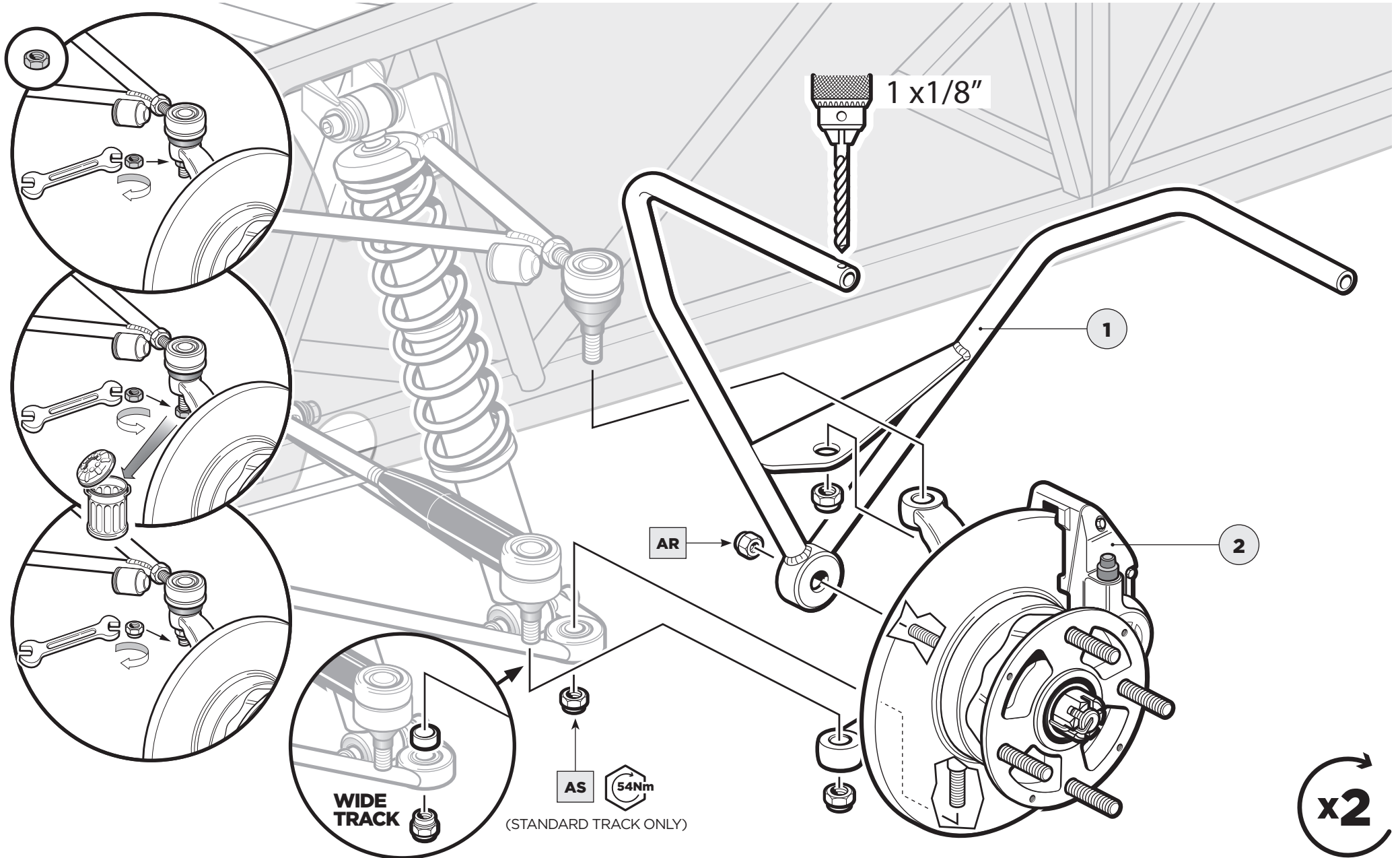
**Chris N**

Put the 'upright' into the lower wishbone joint then attach the steering before tightening the bottom nut. This stops it all swinging around the hitting the side of the chassis.

**John S**



# IT'S TIME FOR THE WINGSTAYS

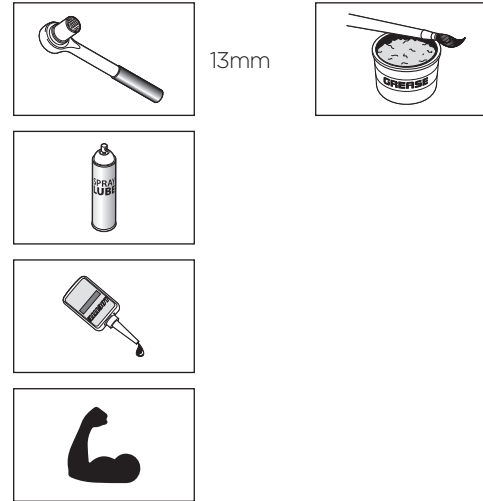


# LAST PART OF THE FRONT SUSPENSION: CONNECTING THE TWO SIDES TOGETHER

## PARTS

- 1 Anti-roll bar
- 2 Anti-roll bar bracket
- 3 Anti-roll bar rubber
- 4 Anti-roll bar ball
- 5 Anti-roll bar dust cover

## TOOLS



## FIXINGS

Pack A		CATERHAM		44	
		PART NUMBER		30F015B	
FRONT SUSPENSION DeDION CARS (METRIC)					
This pack may include extra fasteners to cover different options					
ITEM	BASIC DESCRIPTION	PART NUMBER	QTY	USED ON	ILLUSTRATION
1	AA Bolt M12 x 100 (Metric)	AA022100	2	Lower wishbone rear	
2	AA Bolt M12 x 65 (Metric)	AA022065	2	Lower wishbone front	
3	AC Bolt M12 x 65 (Metric)	AA022065	2	Upper wishbone rear	
4	AC Bolt M12 x 65 (Metric)	AA022065	2	Upper wishbone front	
5	AE Bolt M6 x 40 (Metric)	AA022040	4	Anti-roll bar mounting brackets	
6	AF Plain Nut M12 x 1.5 Thread	AA022114	1	Temporary use to fit the hole across wishbone ball joint	
7	AG Nylon Nut M12	AA022112	2	Lower wishbone rear	
8	AH Nylon Nut M12	AA022110	4	Upper wishbone	
9	AJ Plain Washer M12 (Metric)	AA022012	18	Lower wishbone	
10	AK Plain Washer M6 Heavy duty	AA022018	4	Anti-roll bar mounting brackets	
11	AL Plain Washer 12 x 12 (Metric)	AA022016	2	Brake pipe	

x4

x4

Pack A		CATERHAM		44	
		PART NUMBER		30F015B	
FRONT SUSPENSION DeDION CARS (METRIC)					
This pack may include extra fasteners to cover different options					
ITEM	BASIC DESCRIPTION	PART NUMBER	QTY	USED ON	ILLUSTRATION
12	AM Nylon Washer 12	AA022012	2	Lower wishbone rear	
13	AN Spring Washer M8	AA022018	6	Anti-roll bar mounting brackets & upper damper mount	
14	AP Nylon 12" (Metric)	AA022014	2	Brake pipe	
15	AR Nylon Nut 12" (Metric)	AA022012	2	Wing stay	
16	AS Nylon Nut 12" (Metric)	AA022012	2	Front brake, spring mounting (old track only)	

x4

## TIPS

Check that the colour of the mounting rubbers matches the colour spot on the bar.

John K

Grease the balls and cups generously.

Matt T

Getting the assembled anti-roll bar fully into both cups on the upper wishbone can be a bit of a fight. It's made of springy stuff, so don't worry that you are bending it.

Jamie A

Use four small cable ties to secure the dust cover.

Mick F

# LAST PART OF THE FRONT SUSPENSION: CONNECTING THE TWO SIDES TOGETHER

