



# SYNERGY

## Nomenclature



**Updated: 15/06/2022**

**Version: 3.6**

Aquila Cars A/S reserves the right to make pricing and specification changes as and when necessary. Any changes will be notified at quotation. All prices are excluding VAT. Aquila Cars A/S cannot be held responsible for any errors in printing.

## Change Log

Version	Date	Description
3.0	21/01/2017	Starting version using new layout and format from the start of the 2017 season.
3.1	29/01/2017	Various minor updates.
3.2	18/01/2018	Updates for the start of the 2018 season.
3.3	08/11/2018	Improvements to the layout of the Powertrain and Bodywork sections.
3.4	31/01/2019	Updates for the start of the 2019 season.
3.5	23/07/2019	Made general alterations for purpose of clarity to page 10, 20, 24, 37, and 38.
3.6	15/06/2022	Various minor updates.

The technical regulations are based upon the following:

Parts for Aquila Synergy Cup are represented in the nomenclature and are split into three categories:

<b>Category A</b>	No modifications are permitted. All parts within this category must remain in their original positions and fulfil the function/s for which they were originally intended. These parts must be genuine Aquila Cars A/S components. These components must be approved and marked by Aquila Cars A/S using the Aquila hologram badge.
<b>Category B</b>	Parts are to be treated as 'Category A' unless modifications or prescriptions are indicated in the regulations or in Aquila Cars A/S nomenclature. These components must be approved and marked by Aquila Cars A/S using the Aquila hologram badge.
<b>Category C</b>	The parts stated within this category are considered to be unrestricted, on the express conditions that: <ol style="list-style-type: none"><li>1. The function for which they were originally designed is not deviated.</li><li>2. That it does not fulfil any additional function.</li><li>3. It is located in the same place as the original component.</li></ol>

**Areas to be noted:**

- The set of items or subassemblies that make up a part or assembly are deemed to belong to the same category as the part or assembly in question.
- Scrutineering may consist of comparing that part to be checked against a similar genuine Aquila Cars A/S component. All parts not shown in the technical regulations are systematically classed in category 'A' unless specified otherwise above. In addition all genuine Aquila Cars A/S components will be checked for their badge of originality which must not be damaged or covered in any way.
- The pictures published in this document only aim at making the nomenclature easier to understand. These pictures cannot be used for any comparison with the original vehicle parts.

### **Nuts, screws and bolts**

Nuts, screws and bolts are classed within 'Category C' unless mentioned in the nomenclature, and can be removed if desired.

### **Washers**

All washers are classed within 'Category C' unless mentioned in the nomenclature, and can be removed if desired. It is allowed to add a washer only to improve mechanical assemblies. The use of a washer for setting purposes is forbidden, unless specifically mentioned in the nomenclature.

### **Electrical loom**

The electrical loom is classed within 'Category B' and must be a genuine Aquila Cars A/S item. The loom may be protected by non-retractable sheathes.

### **Protection**

It is permitted to add protection of any kind over mechanical elements of the car unless specifically stated in the nomenclature. These protections must have the sole function of protecting the items contained within their surface. For driver safety, it is allowed to add protection within the cockpit on the condition that these additional items are easily removable without the use of tools.

### **Supports**

It is allowed, unless mentioned in the nomenclature, to add various types of support to improve the fitting of tubes, hoses and electrical looms within the vehicle. Fitting of these supports must not require the modification of any components. The sole function of these supports must be maintaining the components for which they have been added and can only be made of tape, tie-wraps or other non-constructive material.

### **Bodywork**

It is allowed to modify the bodywork elements and their respective supports but only in order to aid in the fitting and correct assembly of these components. Adhesive tape may be put on the bodywork, but in all circumstances its only purpose must be to protect or fasten the component to which it is applied.

## 5.0 ENGINE

### 5.1 GENERAL

- Engine protests will cost 6000 Kr. Before any investigation takes place, the engine will be investigated by an independent party set out by Aquila Cars A/S. Please refer to Appendix 1 for further details about Engine protests.
- Engines will be mounted upright, and aligned East West in the chassis.
- The addition of any material be it metal, plastic or composite etc. by any means be it welding, bonding, encapsulation or encasement to any component is prohibited. The only exception to this, are the approved components from Aquila Cars A/S which can be found in the 'Engine and Transmission Assembly' section of the Aquila Synergy Nomenclature. Specific repair of the mounting points of the cylinder block to the transmission or chassis are allowed, whilst other casting repairs may be allowed with prior written approval of the Technical Commissioner responsible for the Formula.
- Balancing of reciprocating and rotating parts is permitted only by removal of metal from approved locations so set out by the manufacturer.
- It is prohibited to change the water pump, fan and generator drive pulleys and their retention bolts, washers and belts. No under drive pulleys are allowed.
- The generator must remain unchanged. No under drive pulleys allowed.
- The use of non-standard replacement fasteners, nuts, bolts, screws, studs and washers which are not connected with, or which do not support, any moving parts of the engine or its compulsorily retained accessories is permitted. Freedom granted to any fastener does not allow for freedom to move items relative to each other.
- The use of thread locking compounds is permitted.
- Gaskets are free except for the cylinder head, intake and exhaust system gaskets which must be standard Toyota components for the engine, and inlet manifold to cylinder head gasket which must be of production thickness.
- Any process of cleaning may be used on any component providing the surface finish must remain standard, is not affected.
- The exterior surfaces only (of the complete engine assembly) of ferrous parts and the exterior surface of the Plastic Rocker Cover may be protected by paint or similar means. No internal component or surface may be coated by any protective finish. Other Toyota produced aluminum components may be protected only on their external surfaces by a transparent clear varnish, or similar.

- Part numbers quoted were correct at the time the regulations were drafted. However, as with all companies, the Toyota Motor Company reserve the right to make changes to components for reliability or other reasons. Consequently the part numbers quoted may be superseded by later released parts. Full Toyota part numbers do not necessarily appear on all parts.
- It is permitted to use gaskets from Citroen or Peugeot, as long as the stock Toyota dimensions are retained. These must not be machined in any way.
- It is prohibited to alter the engine mounts in any way to lower or raise the engine, or shift it to either side in the chassis.

## **5.2 PERMITTED ENGINE**

- The only permitted engine is the Toyota 1KR-FE from the first gen Toyota Aygo.

## **5.3 INDUCTION**

- The air cleaners cannot be changed to other types than those offered from Aquila Cars A/S.
- The inlet manifold and throttle body system must be the Aquila Synergy system.
- It is prohibited to alter the induction trumpet length and dimensions by any means. Only stock thickness gaskets can be used, and only the stock number of gaskets can be used.
- If any updated induction systems become available from Aquila Cars A/S, these must be retrofitted to older vehicles.

## **5.4 EXHAUST SYSTEM**

- It is prohibited to change the exhaust system and manifold.
- A mandatory silencer from Aquila Cars A/S must be fitted.
- If any updated exhaust systems become available from Aquila Cars A/S, these must be retrofitted to older vehicles.

## **5.5 CYLINDER BLOCK**

- It is permitted, as means of repair, to replace damaged cylinder bores with cast iron cylinder liners, all too standard dimensions.
- It is permitted to machine cylinder liners to maintain deck height.
- The cylinder bore diameter can be a maximum of 71,013mm.

### **5.6 CYLINDER HEAD (INCLUDING VALVES AND VALVE GEAR)**

- Non-standard rocker covers are prohibited.
- Standard valve spring retainers must be used, only stock valve springs are permitted. Shims are permitted.
- Valve lifters must be stock Toyota parts. No machining or lightening is allowed.
- Valves must remain standard, no re-profiling or polishing is permitted. The original 30 degree inlet seat angle, and 45 degree exhaust seat must be maintained. Maximum valve diameter, inlet 27.5mm; exhaust 23.5mm.
- Overall length inlet  $88.50 \pm 0.5\text{mm}$ . Overall length exhaust  $89.10 \pm 0.5\text{mm}$ .
- Valve stem diameter must be 5mm.
- Valve stem seals must be fitted.
- Maximum port diameter at manifold face: inlet 40mm\*28mm.
- Inlet and exhaust port diameter cannot be changed in any way.
- It is permitted, as means of repair, to replace damaged valve guides and valve seats by replacement valve guides and valve seat inserts, to all standard dimensions. The valve seats cannot protrude into the combustion chamber if they are to be changed - they must be mounted flush to the combustion chamber. No machining allowed.
- Valve clearance must be minimum 0.145mm inlet and 0.275mm exhaust.
- The valve seat width must be minimum 1.2mm intake and 1.11 exhaust, and maximum diameter is 27.3mm inlet and 23.2mm exhaust.

### **5.7 COMPRESSION RATIO**

- The maximum compression ratio will be controlled as follows: Maximum compression ratio is 10.5:1.
- It is prohibited to make any changes to the compression chamber, to do any machining or polishing, to move the valves relative to each other, or to do any de-schrouding of the valves.
- The cylinder head minimum thickness is 113.0mm +/-0.1mm.
- Standard Toyota cylinder head gasket Part No. 1111540060, or Victor Reinz Part No. 61-53425-00, metal multilayer must be used. It is prohibited to remove metal layers from the gasket. minimum compressed thickness is (0.5mm),
- ii) Pistons must not protrude above the cylinder block face at TDC. The cylinder block surface may be machined, as long as the compression is not raised past 10.5:1.

### **5.8 CAMSHAFT**

- The only permitted camshaft is the Toyota production camshaft for the 1KR-FE engine.
- The camshaft must remain entirely unmodified. It must be fully manufactured and ground to the Toyota Motor Company profile. It is prohibited to grind from blanks, regrind or re-profile. Shot peening, shot blasting or polishing are prohibited.
- The camshaft profile is defined by determination of lift (L-I) against a flat footed follower at various angles ( $\emptyset$ ). Maximum lift at all points on the camshaft must not be exceeded. The specified lift is cam lift, not valve lift, which is cam lift minus valve clearance. Standard Toyota tolerances apply to the following camshaft lift.
- Dimension
- Symmetrical Cam lobe height: Inlet 41.64, Exhaust 41.07
- Cam base circle: Inlet 33mm, Exhaust 33mm
- Cam lift: Inlet 8.5mm, Exhaust 8mm

### **5.9 PISTONS**

- Pistons must be standard Toyota production pistons for the 998cc engine, unmodified in any way except for balancing and as detailed.
- All three piston rings must be fitted, piston rings must be standard production or similar replacements, i.e. the compression rings must be one piece, with conventional plain gaps, the oil control rings must be either single piece twin land type or apex three piece (two rails and an expander).
- The minimum weight of the piston, piston rings, gudgeon pin, connecting rod, rod bolts and bearings shells are 582g.

### **5.10 CONNECTING RODS**

- Connecting rods must be standard Toyota parts Machining is permitted to remove metal from the balancing bosses on the big-end cap and at the little end, with the sole purpose of balance. Polishing is prohibited.
- It is prohibited to change the centres of the connecting rod by machining, to change the length of the connecting rod.



### **5.11 CRANKSHAFT**

- A standard crankshaft must be used. Spot Machining to achieve balance is permitted.
- Crankshaft pulley must remain stock. No under drive pulley allowed.
- It is not permitted to alter the number of bearings or fit bearings of less than standard production width.
- Standard oversize and undersize bearings are permitted.
- The minimum weight of the crankshaft is 8.620kg.
- It is prohibited to grind the crankshaft on different centers to raise the stroke. The maximum permitted stroke is 84mm.

### **5.12 FLYWHEEL AND CLUTCH**

- The flywheel and clutch assembly must be standard components. To achieve minimum weight and balance, material may be removed from the originally machined surfaces, rim/flange Etc... For rectification, the clutch mating face may be resurfaced. Cast surfaces must remain in original condition. It is permitted to use a similar pattern replacement clutch (i.e. conventional single diaphragm spring) friction plate with shock absorber springs. Organic friction material only is permitted.
- Racing clutches are prohibited.
- Flywheel bolts are free.
- It is permitted to secure the starter ring to the flywheel.
- Flywheel and clutch assembly minimum permitted weight: 9.475Kg. (Including all flywheel and crankshaft mounting bolts).
- It is prohibited to move the location of the flywheel in any way on the crankshaft.

### **5.13 LUBRICATION SYSTEMS**

- It is prohibited to make any change to the oil system. With the exception of the mandatory relocating of the oil filter as set out by Aquila Cars A/S.

### **5.14 COOLING SYSTEM**

- It is prohibited to make changes to the cooling system.
- The cooling liquid must contain a minimum of 30% ethylenglycol, and a maximum of 50%.

#### **5.15 FUEL PUMP**

- Only the Toyota Aygo fuel pump for the engine is permitted.

#### **5.16 IGNITION SYSTEM**

- Only the stock Toyota ignition systems are allowed.
- Spark plugs are free of choice as long as the stock dimensions are retained.

#### **5.17 ENGINE MANAGEMENT**

- Only the engine management system from Aquila Cars A/S is allowed.
- It is prohibited to alter the Electronic Control Unit (ECU) maps, move the placement of the engine ECU trigger system or the crankshaft trigger wheel.
- It is prohibited to use engine sensors, and fuel injectors, other than the standard Toyota components for this engine.

## Vehicle Setup

### Weight

- It is at the discretion of the championship organisers to weigh competition vehicles at any time during a race-weekend, the weight of the car without the driver, must not be less than 420 Kg. The weight of the car inclusive of the driver, must not weigh less than 510 Kg.
- If a car needs to use ballast plates to full fill the rules above, it can only be with original Aquila Cars A/S ballast weight adjusting plates. No other weights will be accepted.

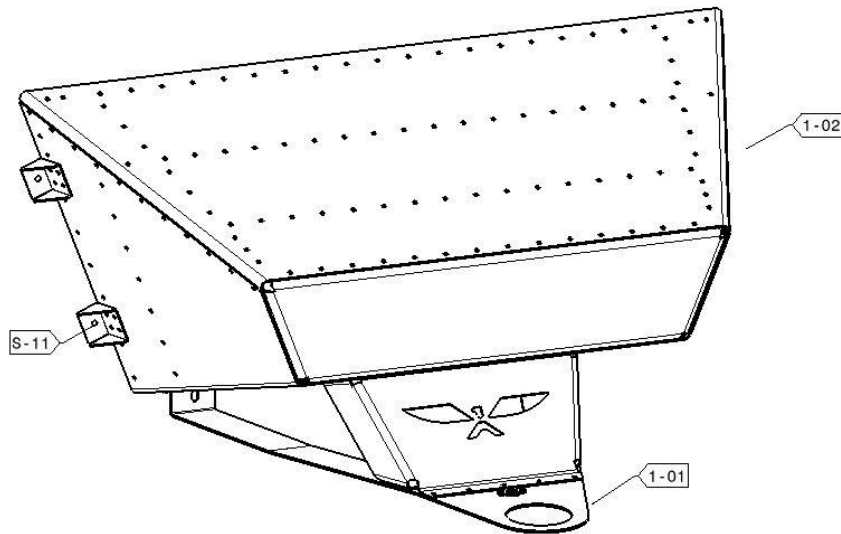
### Setup

- The camber angle on both front and rear corners of the car, can be adjusted. There must be 0 (zero) to 12 (twelve) original 1 mm Aquila adjusting shims, mounted in total. No more – no less.
- The Caster angle on both front and rear corners of the car, is NOT allowed to adjust.
- The Toe-in angle on both front and rear corners of the car, can be adjusted without any restrictions.
- The Ride Height of both front and rear of the car, can be adjusted without any restrictions.
- Tyre pressures are not restricted.



**SYNERGY**

## Crashbox

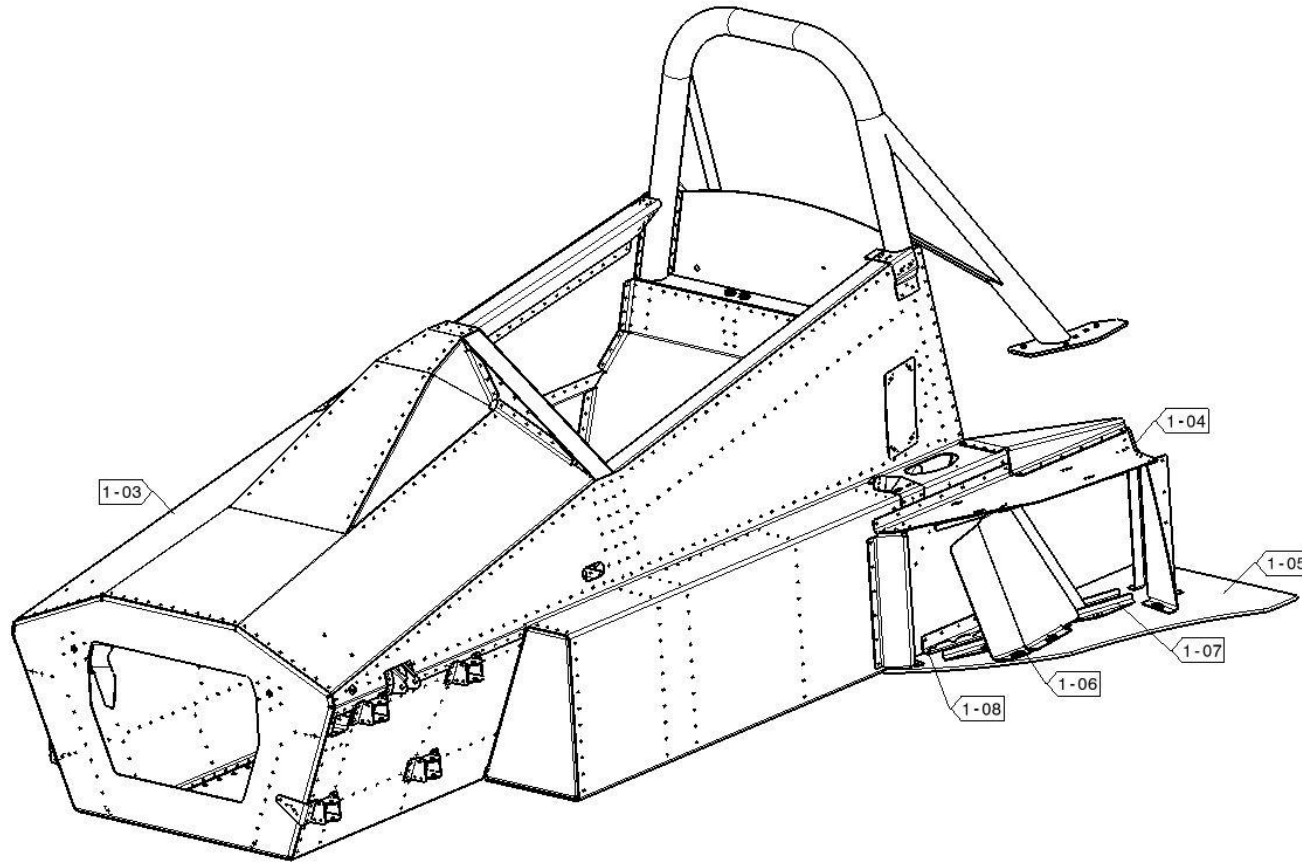


	A	B	C
1-01	X		
1-02	X		
S-11			X

## Crashbox – Part Numbers

Item Number	Part Number	Description
1-01	SC-01-035-0314	Front Towing Eye
1-02	SC-01-035-0409	Crashbox
S-11		Bolt Set: Mounting Crashbox to Chassis

## Chassis – Monocoque



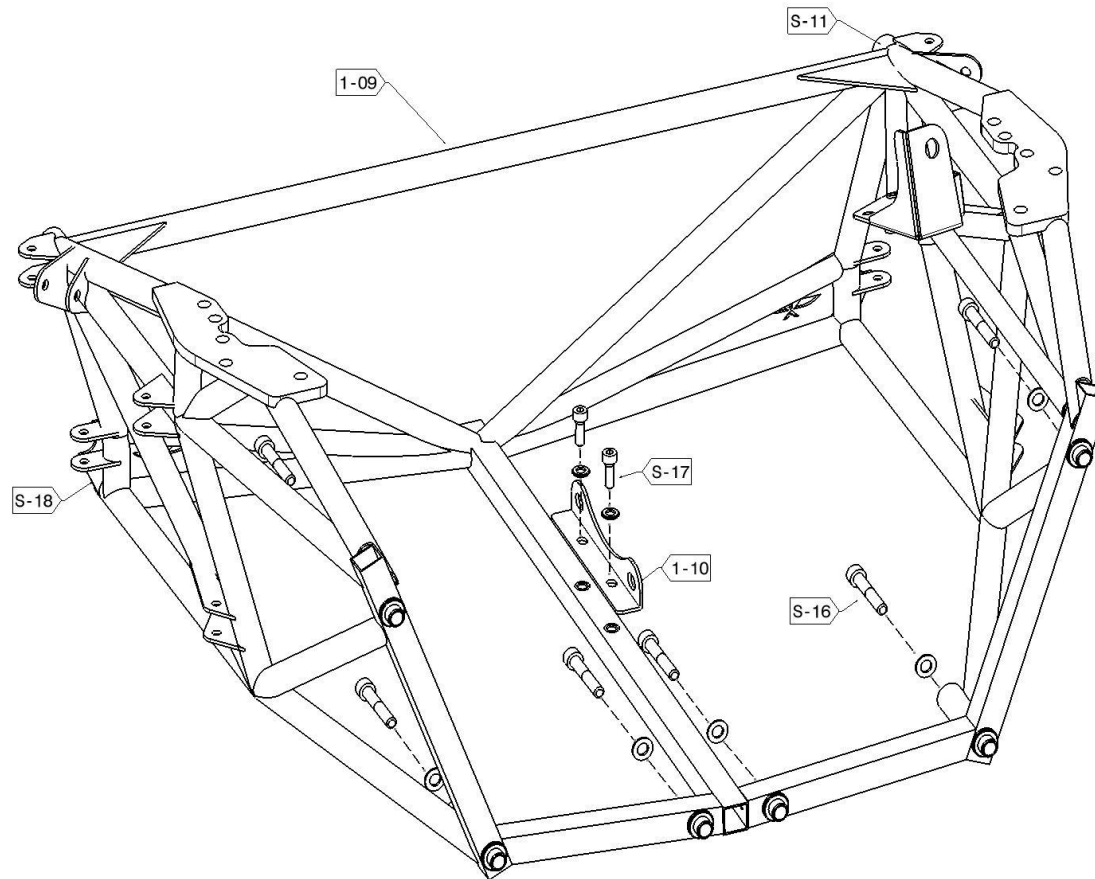
	A	B	C
1-03	X		
1-04	X		
1-05	X		
1-06	X		
1-07	X		
1-08	X		
S-12			X
S-13			X
S-14			X
S-15			X
S-19			X

## Chassis – Monocoque – Part Numbers

Drawing Number	Part Number	Description
1-03	SC-01-001-0410	Monocoque Chassis
1-04	SC-01-058-0015	Radiator Housing
1-05	SC-01-058-0374	Radiator Duct Floor
1-06	SC-01-058-0382	Central Duct Left
	SC-01-058-0383	Central Duct Right
1-07	SC-01-058-0384	Radiator Right Angle Locator
1-08	SC-01-058-0388	Radiator Floor Mounting Strip Left
	SC-01-058-0389	Radiator Floor Mounting Strip Right
S-12		Bolt Set: Rear Roll Hoop to Subframe
S-13		Bolt Set: Radiator Floor
S-14		Bolt Set: Radiator Centre Duct
S-15		Bolt Set: Right Angle Locator through Floor
S-19		Bolt Set: Right Angle Locator through Housing

1-03	Minor repairs may only be completed by Aquila Racing Cars A/S, The repair must be accompanied with a certificate of authenticity for the monocoque life.
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## Chassis – Rear Subframe



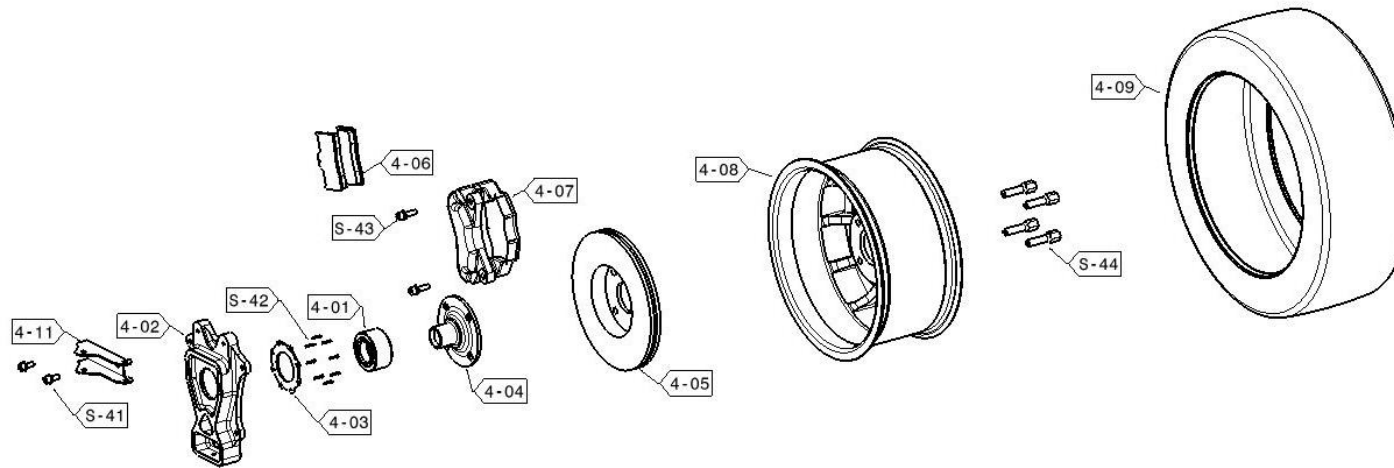
	A	B	C
1-09	X		
1-10	X		
1-11	X		
S-16			X
S-17			X
S-18	X		
S-110			X



## Chassis – Rear Subframe – Part Numbers

Item Number	Part Number	Description
1-09	SC-01-009-0016	Rear Subframe
1-10	SC-01-009-0254	Gearbox Adaptor Plate
1-11	SC01-009-0017	Rear Bodywork Support
S-16		Bolt Set: Subframe to Monocoque
S-17		Bolt Set: Lower Engine Bracket to Subframe
S-18		Bolt Set: Diffuser Mount
S-110		Bolt Set: Gear Cable Mount to Subframe

## Suspension – Front Corner



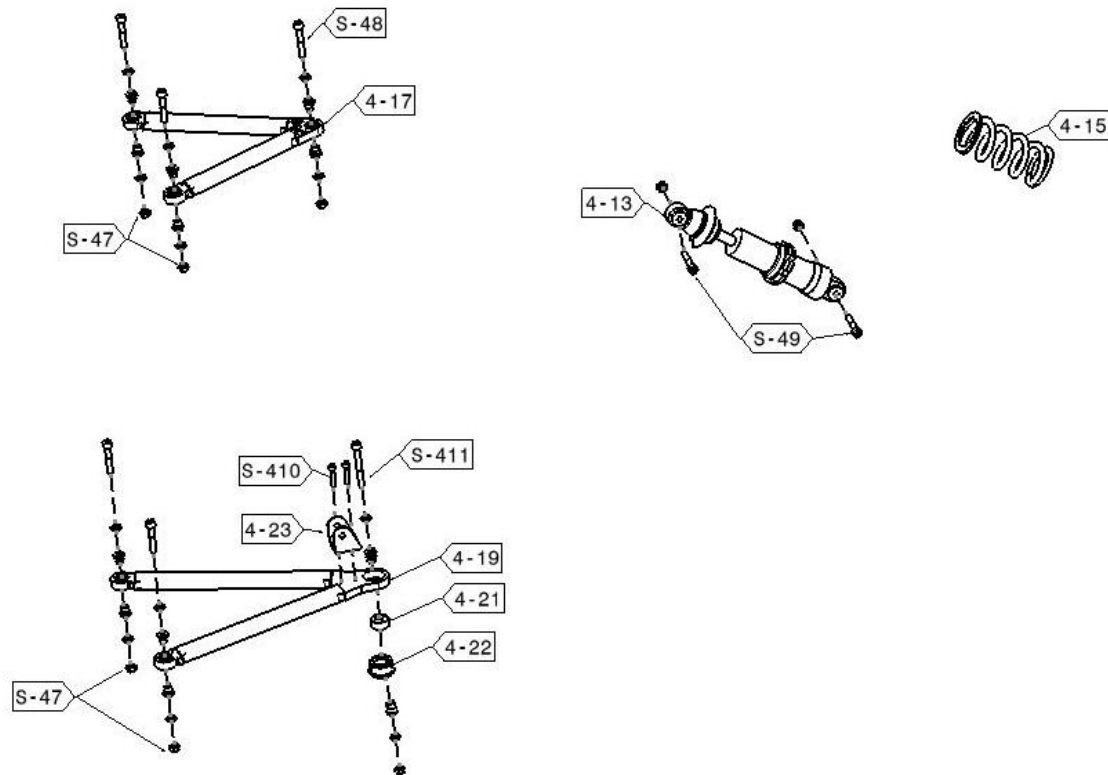
	A	B	C
4-01		X	
4-02	X		
4-03	X		
4-04		X	
4-05		X	
4-06		X	
4-07		X	
4-08	X		
4-09		X	
4-09		X	
4-11	X		
4-23		X	
4-27	X		
S-41			X
S-42			X
S-43			X
S-44		X	
S-45			X
S-46			X

## Suspension – Front Corner – Part Numbers

Item Number	Drawing Number	Description
4-01	SC-04-010-0309	OEM Wheel Bearing
4-02	SC-04-010-0099	Upright
4-03	SC-04-010-0100	Wheel Bearing Retainer Plate
4-04	SC-04-010-0310	OEM Hub
4-05	SC-04-010-0288	OEM Brake Disc
4-06	SC-04-010-0290	Wilwood Brake Pads
4-07	SC-04-010-0289	Wilwood Dynalite Brake Caliper
4-08	SC-04-010-0287	BRAID Winrace-A Wheel R13 x 6
	SC-04-010-0109	Aquila Racing Wheel R13 x 6
4-09	SC-04-010-0285	Front Tyre Dry 160/530-13
4-11	SC-04-010-0065	Front Steering Arm
4-23	SC-04-010-0025	90 Degree Brake Fitting Adapter
4-27	SC-04-010-0101	Aquila Camber Shims
S-41		Bolt Set: Camber Block
S-42		Bolt Set: Retainer Plate
S-43		Bolt Set: Brake Caliper
S-44		Bolt Set: OEM Wheel Bolts
S-45		Bolt Set: Steering Arm
S-46		Bolt Set: Brake Disc Screw

4-04	The hub must be an original OEM hub.
4-06	Brake pads must conform to championship organiser regulations.
4-07	Caliper must be kept in original condition.
4-09	Tyres must conform to championship organiser regulations.

## Suspension – Front Wishbone



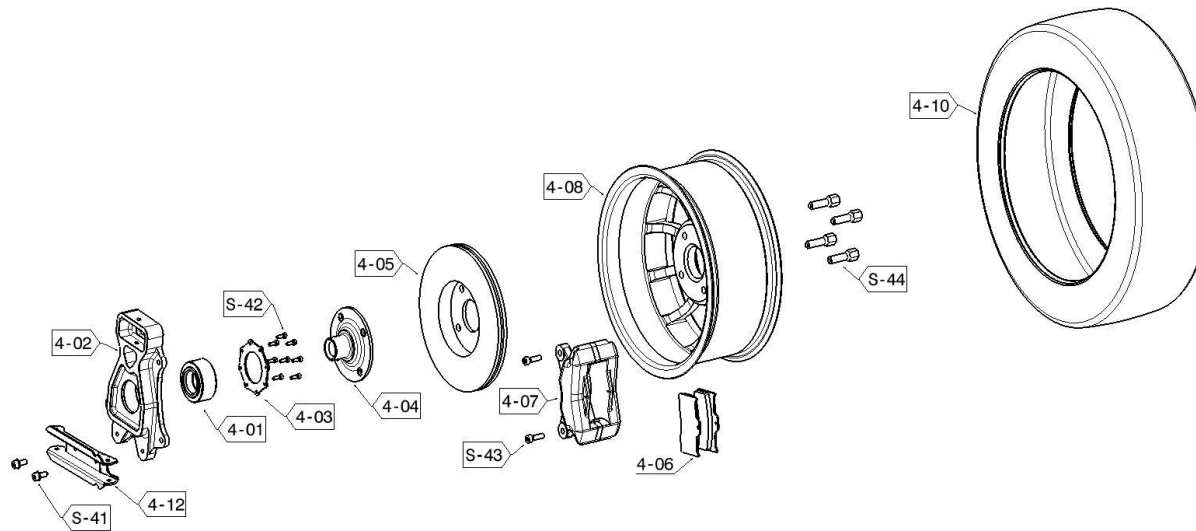
	A	B	C
4-13	X		
4-15		X	
4-17	X		
4-19	X		
4-21	X		
4-22	X		
4-23	X		
S-47			X
S-48			X
S-49			X
S-410			X
S-411			X
TH-1	X		
TH-2	X		
TH-3	X		

## Suspension – Front Wishbones – Part Numbers

Item Number	Part Number	Description
4-13	SC-04-029-0280	INTRAX Front Damper
4-15	SC-04-010-0293	INTRAX Front Spring – 130/60-51mm
4-17	SC-04-010-0294	Front Upper Wishbone
4-19	SC-029-010-0282	Front Lower Wishbone
4-21	SC-04-030	Outboard Lower Wishbone Bearing
4-22	SC-04-029	Outboard Lower Wishbone Bearing Housing
4-23	SC-04-033-0062	Front Lower Damper Mount
S-47		Bolt Set: Front Inboard Wishbone Upper/ Lower
S-48		Bolt Set: Outboard Upper Wishbone
S-49		Bolt Set: Damper
S-410		Bolt Set: Lower Damper Bracket
S-411		Bolt Set: Outboard Lower Wishbone
TH - 1	SC-04-041-0261	Front Wishbone Inboard
TH - 2	SC-04-041-0260	Front Wishbone Outboard Upper/ Rear Track Rod
TH - 5	SC-04-041-0264	Front Wishbone Outboard Lower

4-15	Damper springs must conform to championship organiser regulations
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## Suspension – Rear Corner



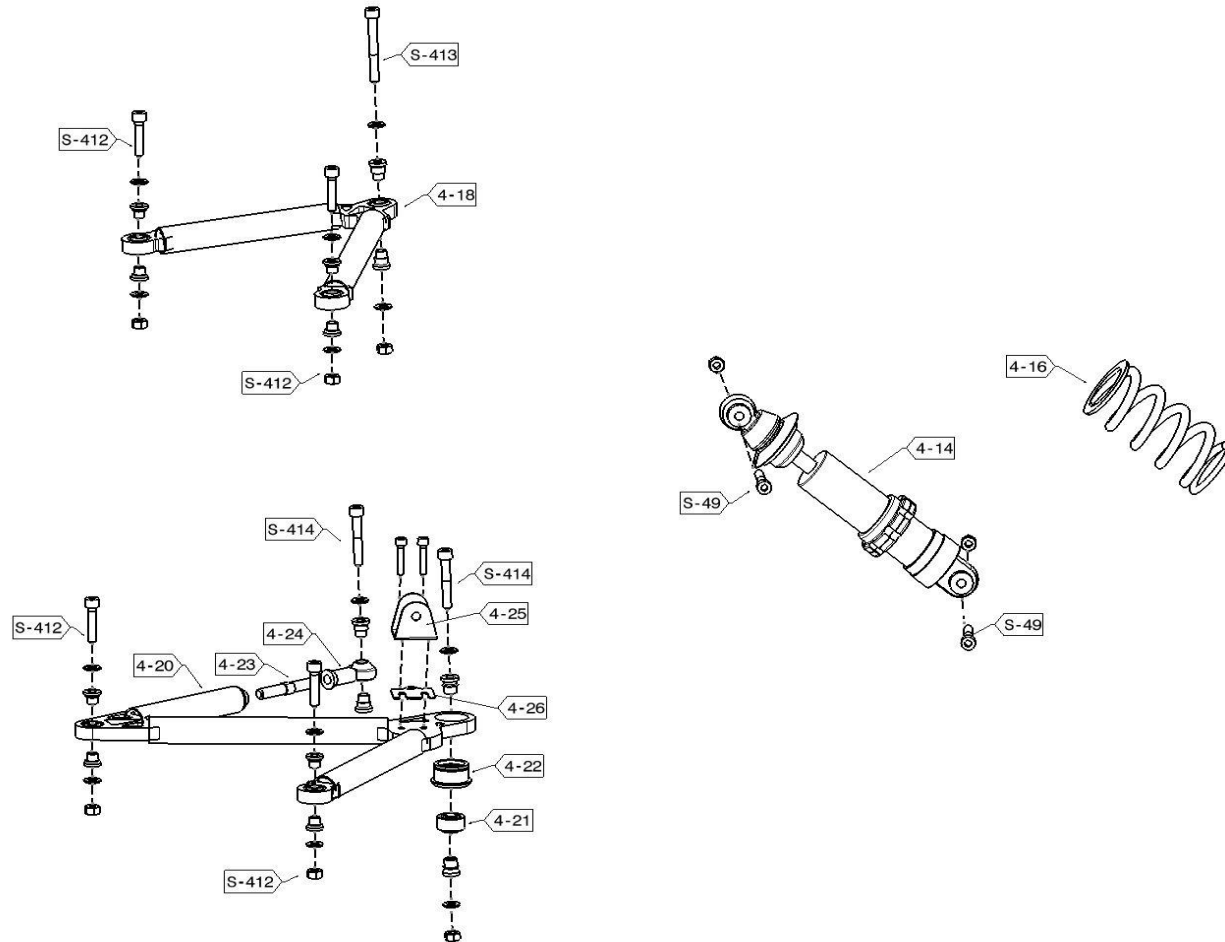
	A	B	C
4-01		X	
4-12	X		
4-02	X		
4-03	X		
4-04		X	
4-05		X	
4-06		X	
4-07		X	
4-08	X		
4-10		X	
4-10		X	
4-23		X	
4-27	X		
S-41			X
S-42			X
S-43			X
S-44		X	

## Suspension – Rear Corner – Part Numbers

Item Number	Part Number	Description
4-01	SC-04-010-0309	OEM Wheel Bearing
4-12	SC-04-011-0064	Rear Steering Arm
4-02	SC-04-010-0099	Upright
4-03	SC-04-010-0100	Wheel Bearing Retainer Plate
4-04	SC-04-010-0310	OEM Hub
4-05	SC-04-010-0288	OEM Brake Disc
4-06	SC-04-010-0290	Wilwood Brake Pads
4-07	SC-04-010-0289	Wilwood Dynalite Brake Caliper
4-08	SC-04-010-0287	BRAID Winrace-A Wheel R13 x 6
	SC-04-010-0109	Aquila Racing Wheel R13 x 6
4-10	SC-04-011-0286	Rear Tyre Dry 180/560-13
4-23	SC-04-010-0025	90 Degree Brake Fitting Adaptor
4-27	SC-04-010-0101	Aquila Camber Shims
S-41		Bolt Set: Camber Block
S-42		Bolt Set: Retainer Plate
S-43		Bolt Set: Brake Caliper
S-44		Bolt Set: OEM Wheel Bolts
S-46		Bolt Set: Brake Disc Screw

4-04	The hub must be an original OEM hub.
4-06	Brake pads must conform to championship organiser regulations.
4-07	Caliper must be kept in original condition.
4-10	Tyres must conform to championship organiser regulations.

## Suspension – Rear Wishbones



	A	B	C
4-14	X		
4-16		X	
4-18	X		
4-20	X		
4-21	X		
4-22	X		
4-23	X		
4-24			X
4-25	X		
4-26	X		
S-412			X
S-413			X
S-414			X
S-415			X
S-416			X
S-417			X
TH – 4	X		
TH – 5	X		
TH – 6	X		

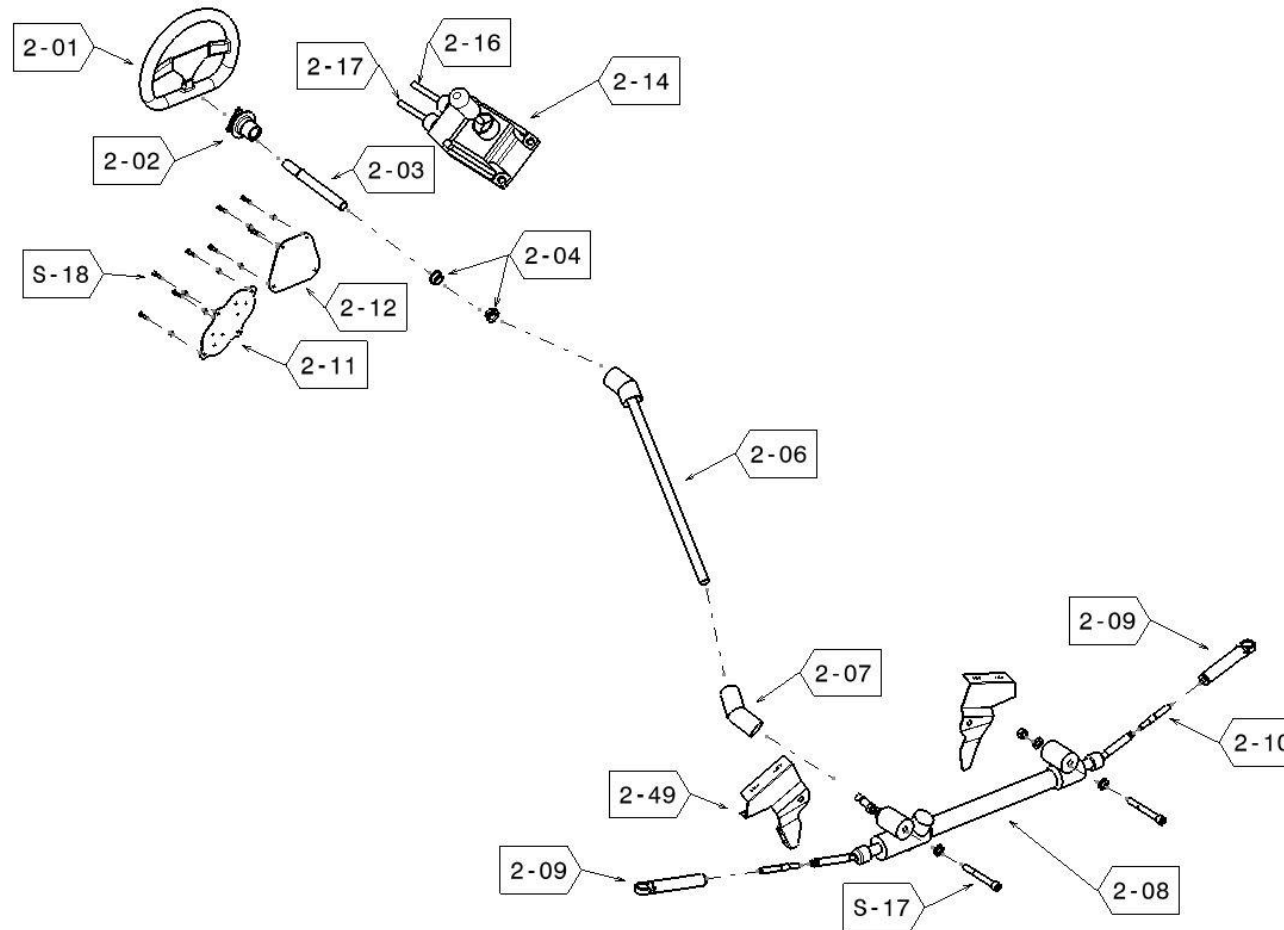


## Suspension – Rear Wishbones – Part Numbers

Item Number	Drawing Number	Description
4-14	SC-04-011-0279	INTRAX Rear Damper
4-16	SC-04-011-0293	INTRAX Rear Spring – 130/70-51mm
4-18	SC-04-032-0307	Rear Upper Wishbone
4-20	SC-04-031-0308	Rear Lower Wishbone
4-21	SC-04-029-0280	Outboard Lower Wishbone Bearing
4-22	SC-04-029-0279	Outboard Lower Wishbone Bearing Housing
4-23	SC-04-010-0025	Track Rod Rear
4-24	SC-04-031-0330	Female M10 Rod End Link
4-25	SC-04-034-0063	Rear Lower Damper Mount
4-26	SC-04-015-0071	Damper Mount Shim
S-412		Bolt Set: Rear Inboard Wishbone
S-413		Bolt Set: Rear Outboard Upper Wishbone
S-414		Bolt Set: Rear Outboard Lower Wishbone
S-415		Bolt Set: Lower Wishbone Damper Bracket
S-416		Bolt Set: Rear Track Rod
S-417		Bolt Set: RH/ LH Rear Track Rod Lock Nuts
TH – 2	SC-04-041-0260	Front Wishbone Outboard Upper/ Rear Track Rod
TH – 3	SC-04-041-0262	Rear Wishbone Inboard
TH – 4	SC-04-041-0263	Rear Wishbone Outboard Upper
TH – 6	SC-04-041-0265	Rear Wishbone Outboard Lower

4-16	Damper springs must conform to championship organiser regulations
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## Driver Controls



	A	B	C
2-01		X	
2-02		X	
2-03	X		
2-04	X		
2-05	X		
2-06	X		
2-07	X		
2-08		X	
2-09	X		
2-10		X	
2-11	X		
2-12	X		
2-14		X	
2-16	X		
2-17	X		
2-49	X		
S-21			X
S-22			X
S-24			X

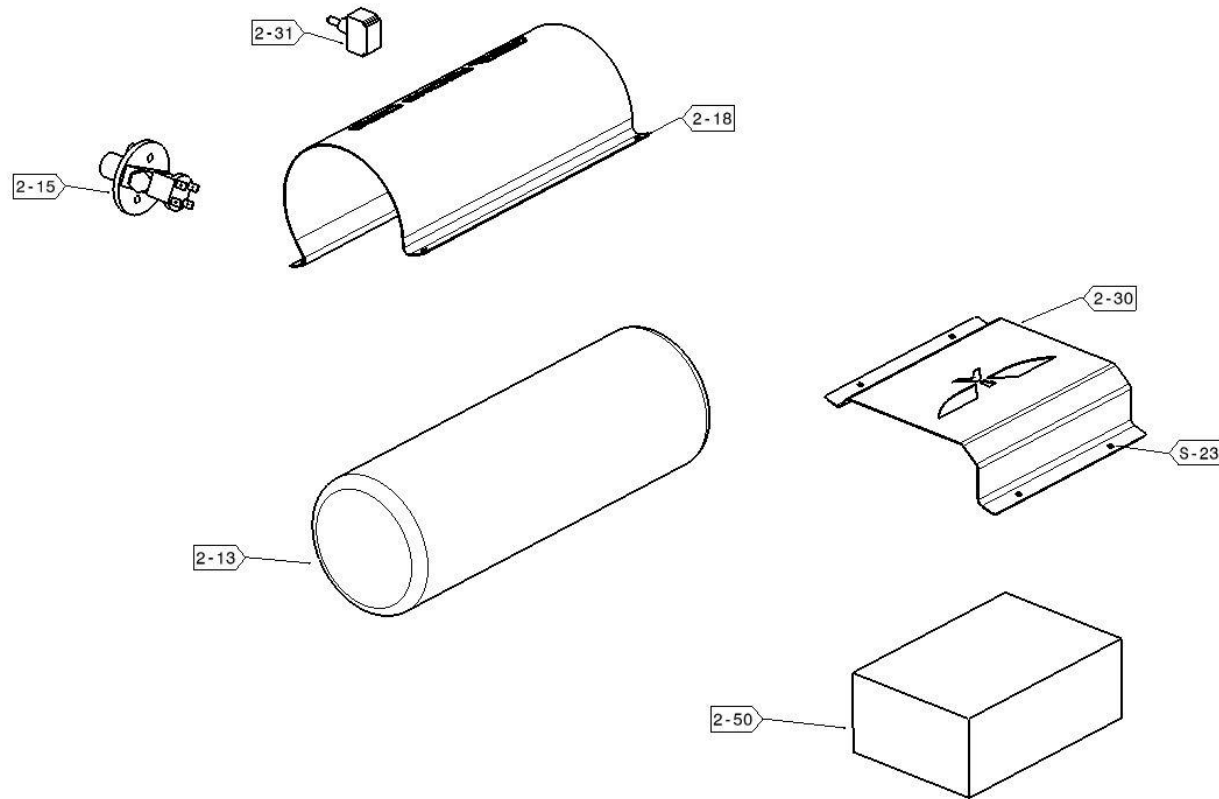


## Driver Controls – Part Numbers

Item Number	Part Number	Description
2-01	SC-02-004-0297	OMP Steering Wheel
2-02	SC-02-004-0298	Quick Release Steering Boss
2-03	SC-04-004-0284	Steering Column Upper Tube (with Spline)
2-04	SC-02-004-0299	Steering Column Bushes
2-06	SC-02-004-0281	Steering Column Lower Tube with Universal Joint
2-07	SC-02-004-0282	Steering Column Rack Universal Joint
2-08	SC-02-004-0300	OEM Steering Rack
2-09	SC-02-004-0305	Front Track Rod Outboard End
2-11	SC-02-026-0188	Switch Panel
2-12	SC-02-026-0158	Display Cover Panel
2-14	SC-02-003-0307	OEM Gear Lever Selector Unit
2-16	SC-02-003-0411	Outer Gear Cable
2-17	SC-02-003-0412	Inner Gear Cable
2-49	SC-01-021-0088	Steering Rack Mount Left
	SC-01-021-0089	Steering Rack Mount Right
S-21		Bolt Set: OEM Steering Rack
S-22		Bolt Set: Switch Panel Covers
S-24		Bolt Set: OEM Gear Lever Selector Unit

2-01	Must be approved by Aquila Cars A/S.
2-02	Quick release must be approved from Aquila Cars A/S.
2-03	Spline must be welded to tube by Aquila Cars A/S.
2-08	Gearing (for Steering Rack Ratio) must be original OEM parts.
2-14	Must be original OEM part.

## Driver Controls – Safety



	A	B	C
2-13		X	
2-15		X	
2-18	X		
2-30	X		
2-31		X	
2-50		X	
2-51	X		
S-23			X
S-25			X
S-26			X

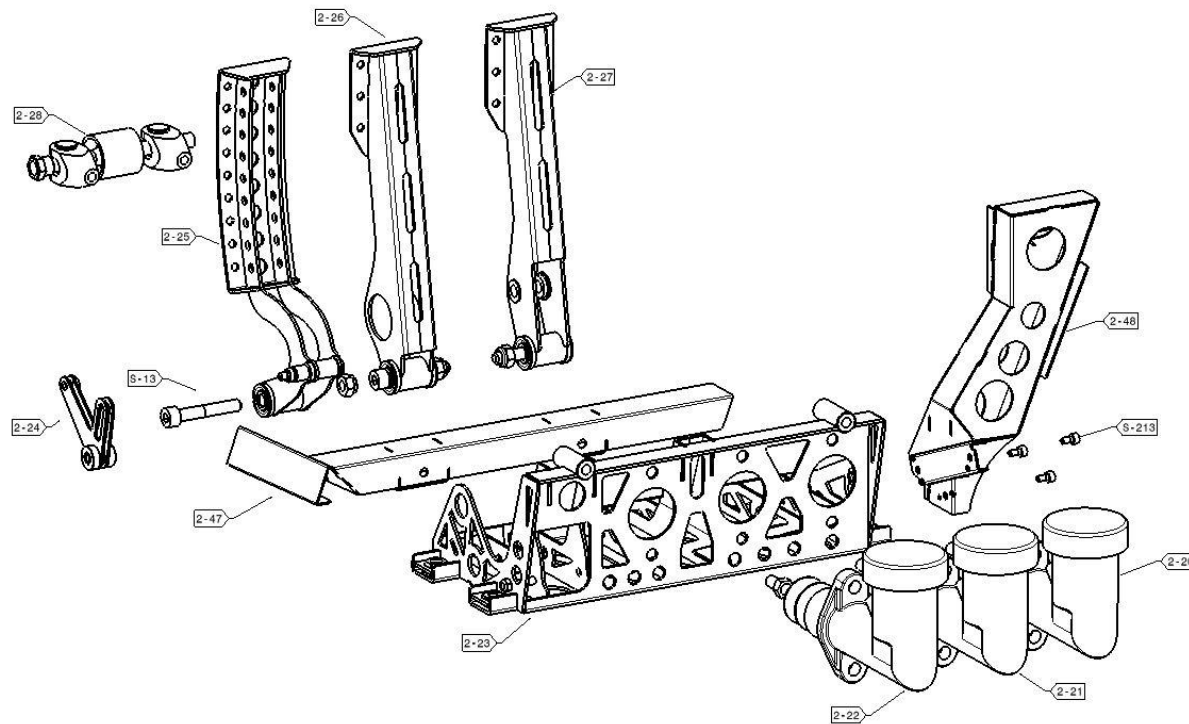


## Driver Controls – Safety – Part Numbers

Item Number	Part Number	Description
2-13	SC-02-025-0306	Fire Extinguisher
2-15	SC-02-026-0308	Driver Electrical Kill Switch
2-18	SC-01-001-0187	Extinguisher Cover
2-30		Battery Cover
2-31		Ignition Button
2-50		Battery
2-51		Plex µSDM-102 Pro Display
S-23		Bolt Set: Fire Extinguisher/Battery Cover
S-25		Bolt Set: Safety Belt
S-26		Bolt Set: Driver Electrical Kill Switch
S-27		Bolt Set: Seat

2-13	Must be the extinguisher stated in the Nomenclature.
2-51	Must be the display as provided by Aquila Racing Cars A/S.

## Driver Controls – Pedal Box



	A	B	C
2-20		X	
2-21		X	
2-22		X	
2-23	X		
2-24	X		
2-25	X		
2-26	X		
2-27	X		
2-28			X
2-47	X		
2-48	X		
S-28			X
S-29			X
S-210			X
S-211			X
S-212	X		
S-213			X

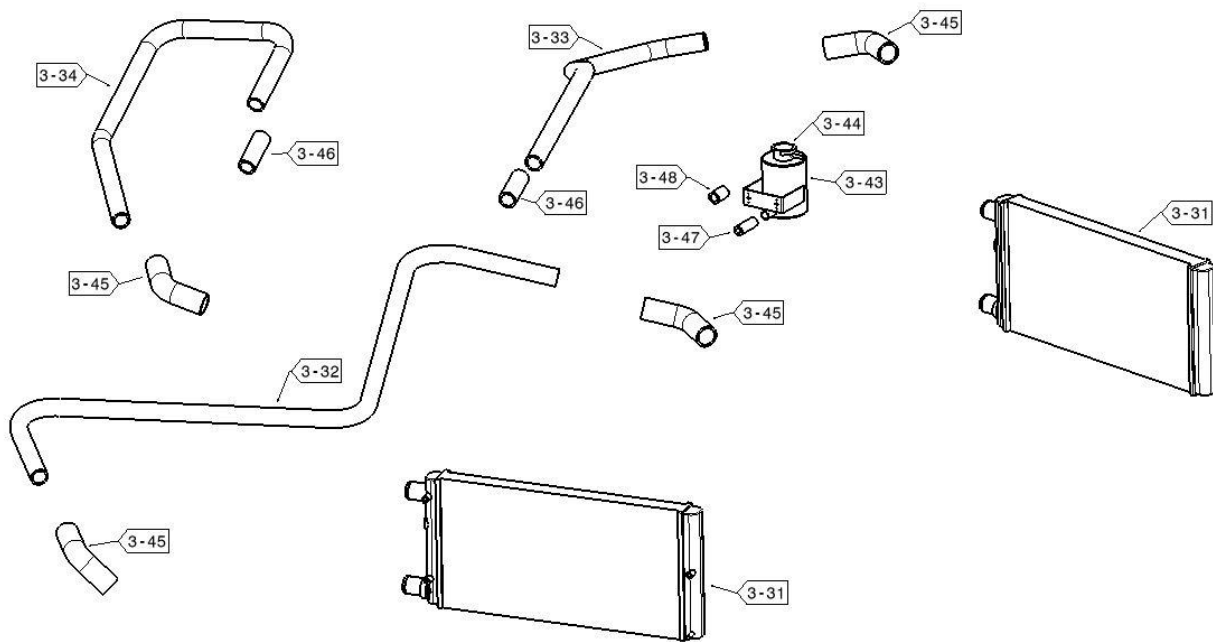
**SYNERGY**

## Driver Controls – Pedal Box – Part Numbers

Item Number	Part Number	Description
2-20	SC-02-005-0299	0.75" Bore Wilwood Master Cylinder – Clutch
2-21	SC-02-005-0298	5/8" Bore Wilwood Master Cylinder – Front Brake
2-22	SC-02-005-0297	0.7" Bore Wilwood Master Cylinder – Rear Brake
2-23	SC-02-005-0186	Pedal Box Base
2-24	SC-02-005-0309	Throttle Pedal Rocker
2-25	SC-02-046	Throttle Pedal
2-26	SC-02-047	Brake Pedal
2-27	SC-02-048	Clutch Pedal
2-28		Brake Balance Bar
2-38		Brake Bias Cable
2-39		Banjo Bolt Single
2-40		Banjo Bolt Double
2-41		Brake Light Switch Bolt
2-42		10mm Copper Washer
2-43		Brake Hose Complete Kit
2-44		Clutch Hose
2-45		Male T-Piece Adaptor
2-47		Heel Rest
2-48		Foot Rest
S-49		Throttle Cable
S-28		Bolt Set: Pedal Box Base to Chassis
S-29		Bolt Set: Throttle Pedal Rocker
S-210		Bolt Set: Pedal to Pedal Box Base
S-211		Bolt Set: Master Cylinder to Pedal Box Base
S-212		Bolt Set: Throttle Cable Lock-Off
S-213		Bolt Set: Foot Rest to Pedal Box Base

2-20, 2-21, 2-22	Must be the part stated in the Nomenclature
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## Powertrain – Cooling System



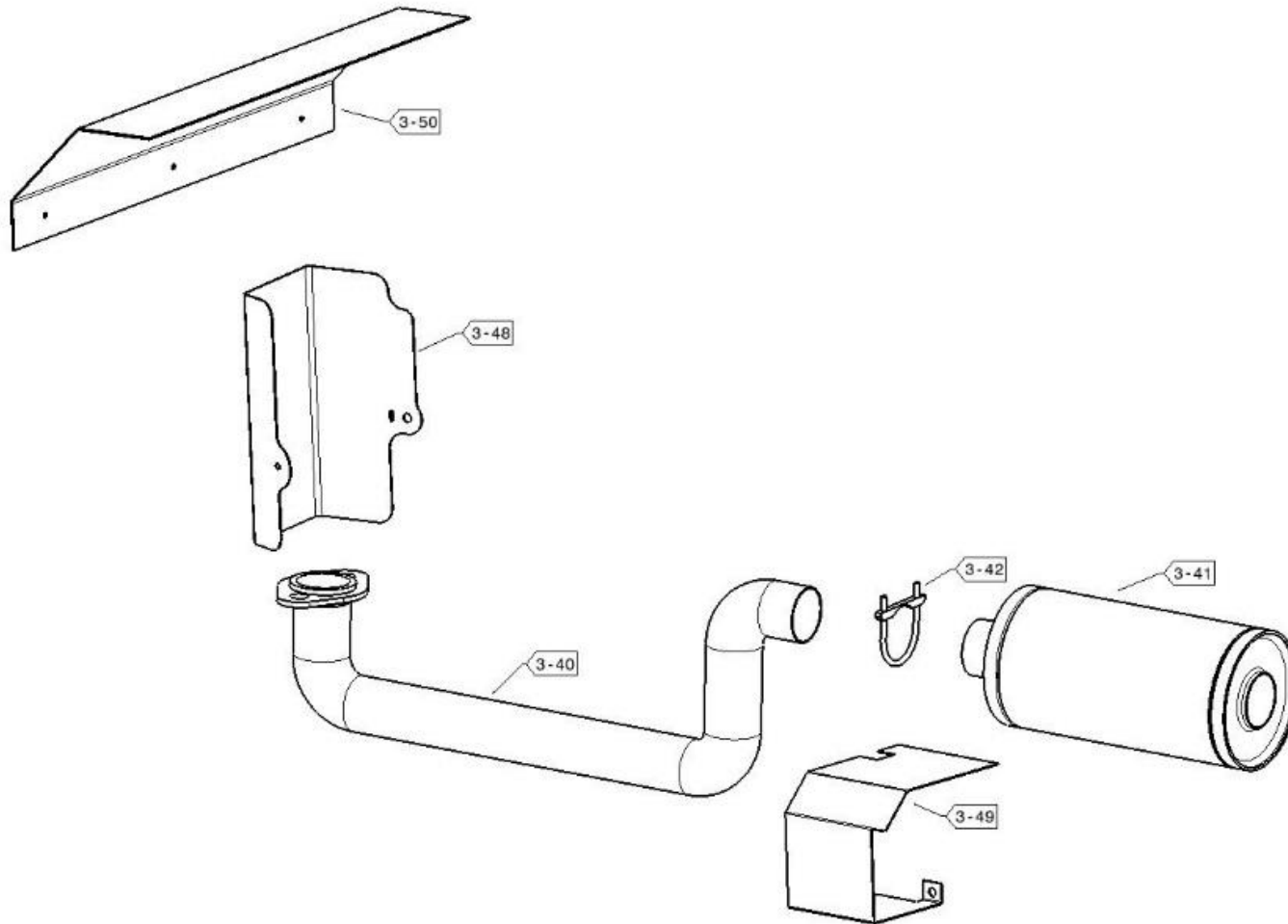
	A	B	C
3-31		X	
3-32		X	
3-33	X		
3-34	X		
3-43	X		
3-44	X		
3-45	X		
3-46	X		
3-47	X		
3-48	X		



## Powertrain – Cooling System – Part Numbers

Item Number	Part Number	Description
3-31	SC-03-013-0085	Radiator
3-32	SC-03-013-0519	Radiator to Radiator Cooling Pipe
3-33	SC-03-013-0520	Upper Left Cooling Pipe
3-34	SC-03-013-0521	Upper Right Cooling Pipe
3-43	SC-03-013-0522	Expansion Tank
3-44	SC-03-013-0523	Expansion Tank Cap
3-45	SC-03-013-0524	Aquila Silicon 60 Degree elbow
3-46	SC-03-013-0525	Aquila Silicon Large Diameter Straight
3-47	SC-03-013-0526	Aquila Silicon Small Diameter Straight
3-48	SC-03-013-0527	Aquila Blanking Hose

## Powertrain – Exhaust System

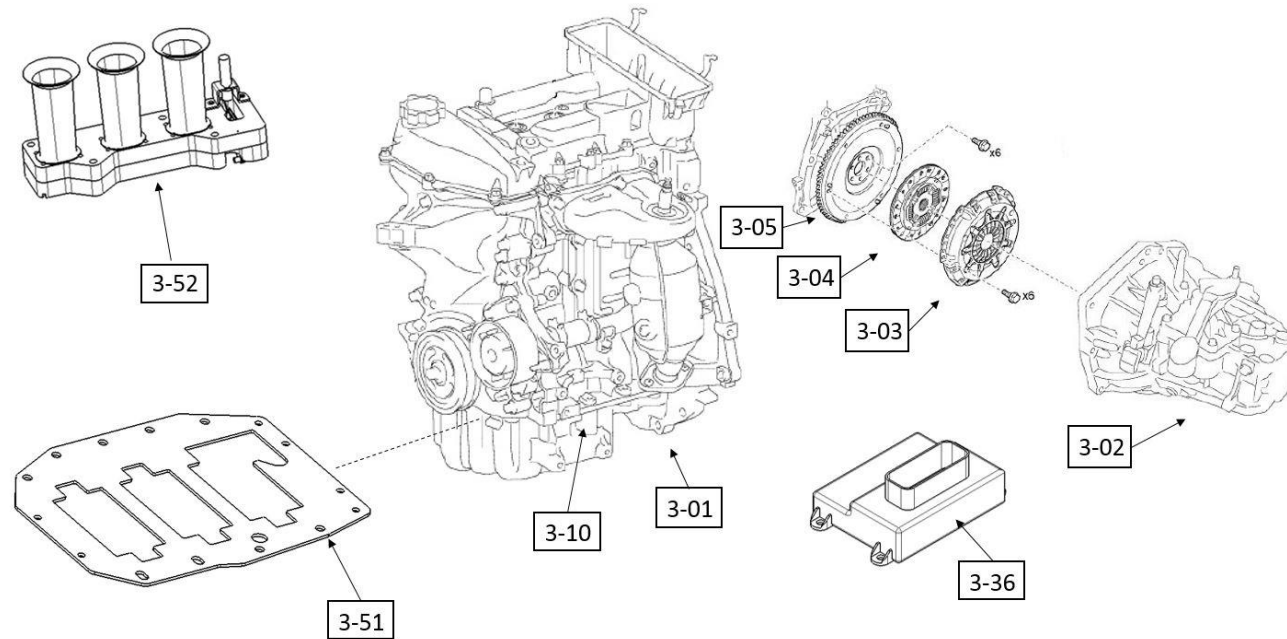


	A	B	C
3-40	X		
3-41	X		
3-42		X	
3-48	X		
3-49	X		
3-50	x		

## Powertrain – Exhaust System – Part Numbers

Item Number	Part Number	Description
3-40	SC-02-028-0228	Exhaust
3-41	SC-02-028-0504	Exhaust Silencer
3-42	SC-02-028-0505	Exhaust Mount
3-48	SC-02-028-0506	Exhaust Heat Shield
3-49	SC-03-006-0452	Exhaust Driveshaft Heat Shield
3-50	SC-03-006-0453	Exhaust Gear Shift Cable Heat Shield

## Powertrain – Engine and Transmission Assembly



	A	B	C
3-01		X	
3-02		X	
3-03		X	
3-06	X		
3-30	X		
3-35	X		
3-36	X		
3-37	X		
3-38	X		
3-51	X		
3-52	X		

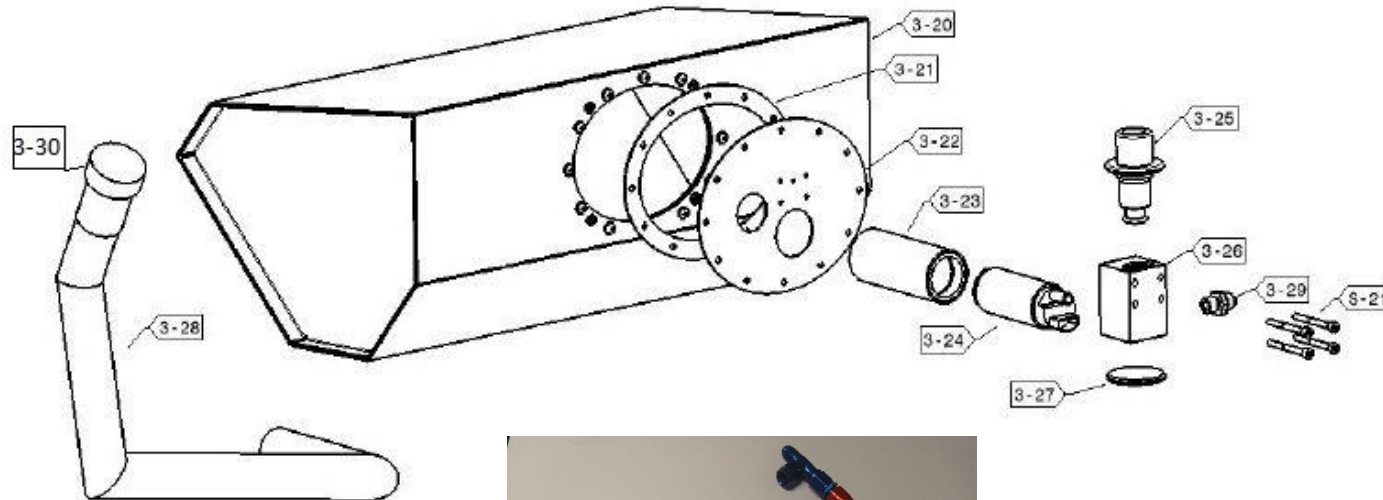


## Powertrain – Engine and Transmission Assembly – Part Numbers

Item Number	Part Number	Description
3-01	SC-03-006-0394	1.0 Litre 3 Cylinder 1KR-FE Engine
3-02	SC-03-006-0395	Gearbox for 1.0 Litre 3 Cylinder 1KR-FE Engine
3-03	SC-03-006-0396	OEM Clutch Plate Kit
3-06	SC-03-006-0272	Adaptor Plate for Moving Oil Filter
3-30		Oil Filter
3-35		Engine Wire Loom
3-36		ECU
3-37		Chassis Wire Loom
3-38		Automatic Fuse
3-51	SC-03-006-0272	Oil Sump Baffle Plate
3-52		Throttle Body

3-01	Engine must use original OEM parts. Servicing and cleaning is allowed. The installation of the Oil Sump Baffle Plate, Oil Filter Adaptor and Aquila Synergy Throttle Body are the only allowed changes. Engine code must be 1KR-FE.
3-02	Gearbox must use original OEM parts. Servicing and cleaning is allowed.
3-03, 3-04, 3-05	Must use OEM parts, and adhere to the weight restriction as set out on page 7 Paragraph 5.12.

## Powertrain – Fuel System



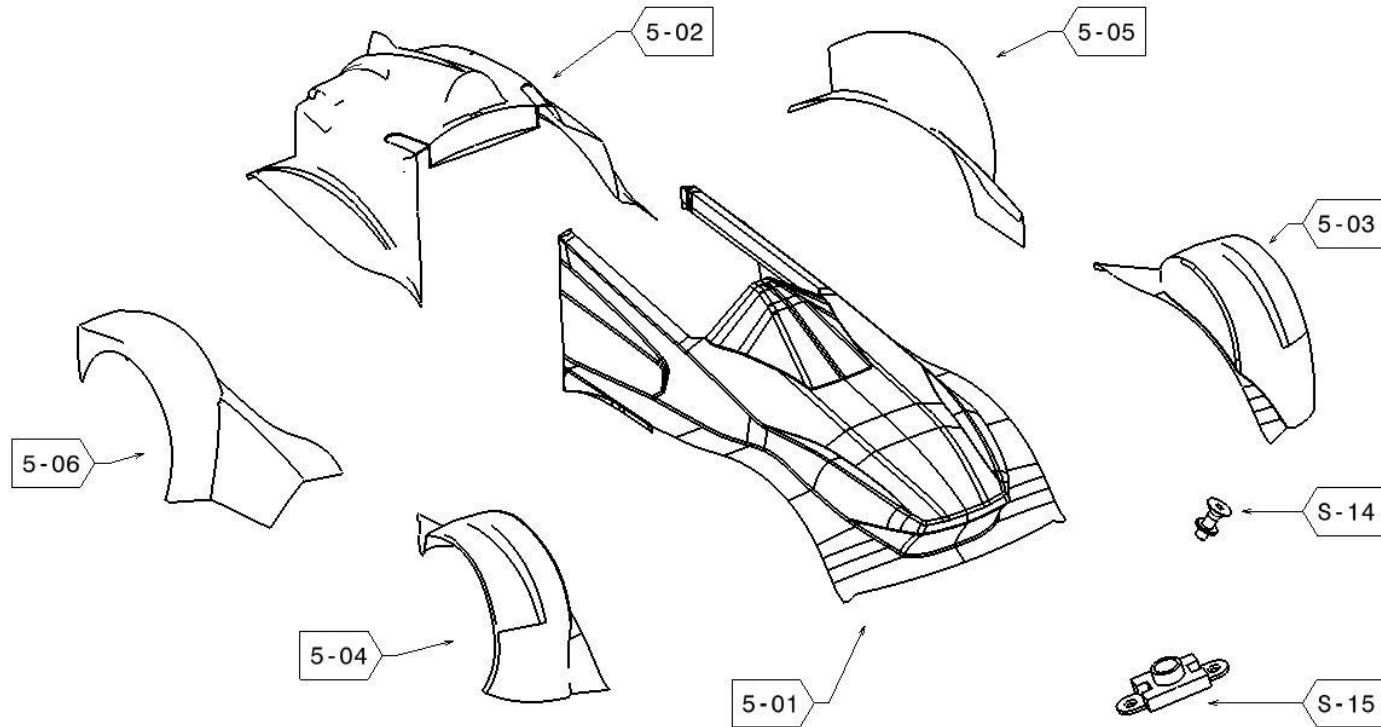
	A	B	C
3-20	X		
3-21	X		
3-22	X		
3-23	X		
3-24		X	
3-25		X	
3-26	X		
3-27	X		
3-28	X		
3-29			X
3-30	X		
3-53	X		
S-32			X
S-33			X
S-34			X

## Powertrain – Fuel System – Part Numbers

Item Number	Drawing Number	Description
3-20	SC-03-008-0413	Fuel Cell
3-21	SC-03-008-0104	Access Panel Mounting Gasket
3-22	SC-03-008-0102	Access Panel
3-23	SC-03-008-0414	Fuel Pump Housing
3-24	SC-03-008-0415	Fuel Pump
3-25	SC-03-008-0416	Fuel Regulator
3-26	SC-03-008-0417	Fuel Regulator Housing
3-27	SC-03-008-0418	Fuel Regulator Plug
3-28	SC-03-008-0419	Fuel Filler Neck
3-29	SC-03-008-0005	Dash-6 Outlet Fitting
3-30		Fuel Filler Neck Cap
3-53		3-Way DASH6 fitting and Fuel line with Break-away coupling male
S-32		Bolt Set: Fuel Regulator Housing Mounting Bolts
S-33		Bolt Set: Access Panel Mounting Bolts
S-34		Bolt Set: Fuel Regulator O-Ring Kit

3-24, 3-25	Must use original OEM parts.
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## Bodywork



	A	B	C
5-01		X	
5-02		X	
5-03		X	
5-04		X	
5-05		X	
5-06		X	
5-19	X		
5-20	X		
5-21	X		
S-51			X
S-52			X
S-53			X
S-54			X

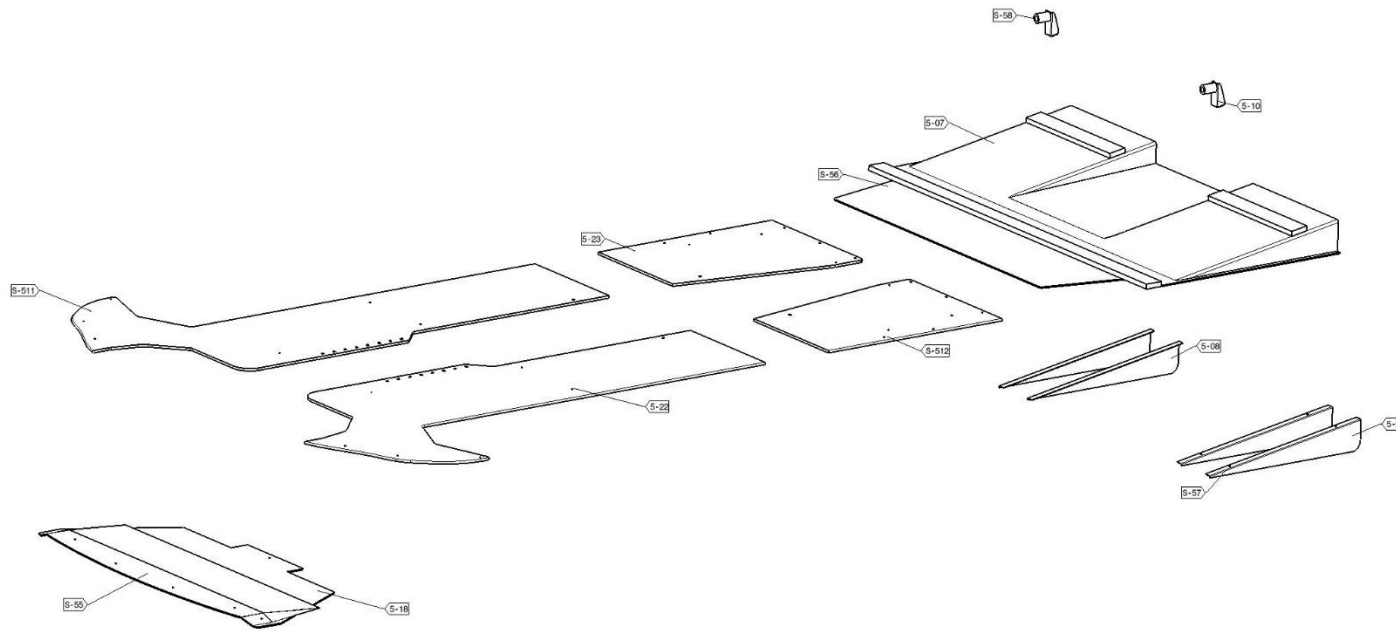


## Bodywork – Part Numbers

Item Number	Part Number	Description
5-01	SC-05-017-0273	Front Centre Section
5-02	SC-05-017-0274	Rear Centre Section
5-03	SC-05-017-0275	Front Left Fender
5-04	SC-05-017-0276	Front Right Fender
5-05	SC-05-017-0277	Rear Left Fender
5-06	SC-05-017-0278	Rear Right Fender
5-19	SC-06-040-0365	Brake Light Bracket Left
	SC-06-040-0366	Brake Light Bracket Right
5-20	SC-06-040-0404	Brake Light Cover Left
	SC-06-040-0405	Brake Light Cover Right
5-21	SC-06-040-0367	Brake Light
5-25		Rain Light
5-26		Rain Light Bracket
S-51		Bolt Set: Front Fender
S-52		Bolt Set: Rear Fender
S-53		Bolt Set: Centre Section
S-54		Bolt Set: Brake Light

5-01, 5-02, 5-03, 5-04, 5-05, 5-06, 5-07	All parts can be painted or Vinyl Wrapped.
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## Bodywork – Floor

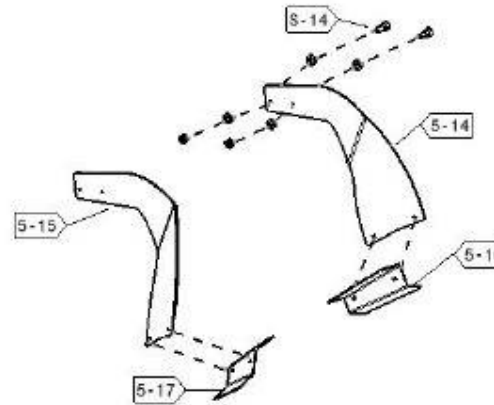
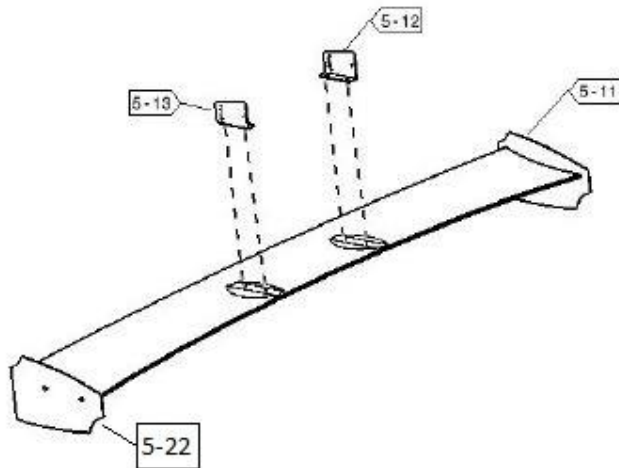


	A	B	C
5-07	X		
5-08	X		
5-09	X		
5-10	X		
5-18	X		
5-22	X		
5-23	X		
S-55			X
S-56			X
S-57			X
S-58			X
S-511			X
S-512			X

## Bodywork – Floor – Part Numbers

Item Number	Part Number	Description
5-07	SC-05-055-0407	Diffuser
5-08	SC-05-055-0346	Diffuser Left Strake
5-09	SC-05-055-0345	Diffuser Right Strake
5-10	SC-05-055-0347	Side Mount
5-18	SC-05-054-0408	Front Floor
5-22	SC-05-054-0551	Front Wooden Floor Left
		Front Wooden Floor Right
5-23	SC-05-054-0552	Rear Wooden Floor Left
		Rear Wooden Floor Right
S-55		Bolt Set: Mounting Front Floor
S-56		Bolt Set: Diffuser to Chassis
S-57		Bolt Set: Strakes to Diffuser
S-58		Bolt Set: Diffuser to Side Mount
S-511		Bolt Set: Front Wooden Floor to Chassis
S-512		Bolt Set: Rear Wooden Floor to Chassis

## Bodywork – Rear Wing



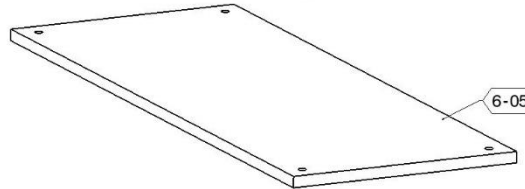
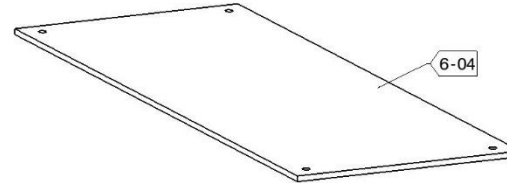
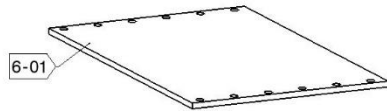
	A	B	C
5-11		X	
5-12	X		
5-13	X		
5-14		X	
5-15		X	
5-16	X		
5-17	X		
5-22	X		
5-24	X		
5-25	X		
S-59			
S-510			

## Bodywork – Rear Wing – Part Numbers

Item Number	Part Number	Description
5-11	SC-05-056-0406	Rear Wing
5-12	SC-05-056-0350	Adjustable Wing Bracket
5-13	SC-05-056-0351	Adjustable Wing Bracket
5-14	SC-05-056-0349	Wing Mount Left
5-15	SC-05-056-0348	Wing Mount Right
5-16	SC-05-056-0354	Wing Mount Bodywork Attachment Plate Left
5-17	SC-05-056-0353	Wing Mount Bodywork Attachment Plate Right
5-22	SC-05-056-0352	Rear Wing End Plate
5-24		Rear Wing Support Brace
5-25	SC-05-056-0118	Rear Wing Cross Brace
S-59		Bolt Set: Adjustable Wing Mount to Wing Mount
S-510		Bolt Set: Wing Mount to Bodywork Attachment Plate

5-11, 5-14, 5-15	Can be painted or Vinyl wrapped.
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## Vehicle Setup – Ballast Plates



	A	B	C
6-01	X		
6-02	X		
6-03	X		
6-04	X		
6-05	X		

## Vehicle Setup – Ballast Plates – Part Numbers

Item Number	Part Number	Description
6-01	SC-07-069-0553	Pedal Box Ballast Plate – 2.5Kg
6-02	SC-07-069-0554	Pedal Box Ballast Plate – 4.6Kg
6-03	SC-07-069-0555	Pedal Box Ballast Plate – 9.3Kg
6-04	SC-07-069-0556	Seat Ballast Plate – 5.6Kg
6-05	SC-07-069-0557	Seat Ballast Plate – 11.3Kg

## Bolt Set Description

Bolt Set Name	Bolt Set Number	Bolt Description				Nut Description			Washer Description			
		Bolt Diameter	Bolt Length	Bolt Head	QTY	Diameter	Type	QTY	Internal Diameter	Type	Material	QTY
Mounting Crashbox to Chassis	S-11	M5	20	Cap Allen	6	N/A	N/A	N/A	5mm	Nordlock	Steel	6
Rear Roll Hoop to Subframe	S-12	M10	30	Cap Allen	6	10mm	Nyloc	6	10mm	Standard	Steel	6
Radiator Floor	S-13	M5	16	Countersunk	7	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Radiator Centre Duct	S-14	M5	16	Countersunk	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		M5	16	Button	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Right Angle Locator through Floor	S-15	M5	16	Countersunk	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Subframe to Monocoque	S-16	M10	60	Cap Allen	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		M10	70	Cap Allen	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lower Engine Bracket to Subframe	S-17	M8	25	Cap Allen	2	N/A	N/A	N/A	8mm	Nordlock	Steel	2
Diffuser Mount	S-18											
Right Angle Locator through Housing	S-19	M5	12	Button	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gear Cable Mount to Subframe	S-110	M10x1.25	50	Hex	2	N/A	N/A	N/A	10mm	Standard	Steel	2
		M10x1.25	50	Hex	1	N/A	N/A	N/A	10mm	Standard	Steel	1
Front Steering Arm	S-41	M8	30	Cap Allen	2	N/A	N/A	N/A	8mm	Nordlock	Steel	2
Retainer Plate	S-42	M5	16	Button	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Brake Caliper	S-43	M10	30	Cap Allen	2	N/A	N/A	N/A	10mm	Nordlock	Steel	2
OEM Wheel Bolts	S-44	M12	30	OEM Hex		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rear Steering Arm	S-45	M8	50	Cap Allen	1	8mm	Nyloc	1	8mm	Standard	Steel	1
Brake Disc Screw	S-46	M6	10	Countersunk	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A





Front Inboard Wishbone Upper/ Lower	S-47	M8	45	Cap Allen	2	8mm	Nyloc	2	N/A	N/A	N/A	N/A
Outboard Upper Wishbone	S-48	M8	50	Cap Allen	1	8mm	Nyloc	1	8mm	Standard	Steel	2
Damper to Mounting Brackets	S-49	M8	50	Cap Allen	2	8mm	Nyloc	2	N/A	N/A	N/A	N/A
Lower Wishbone Bracket	S-410	M6	30	Button	2	6mm	Nyloc	2	N/A	N/A	N/A	N/A
Outboard Lower Wishbone	S-411	M8	65	Cap Allen	1	8mm	Nyloc	1	8mm	Standard	Steel	2
Rear Inboard Wishbone	S-412	M8	35	Cap Allen	2	8mm	Nyloc	2				
Rear Outboard Upper Wishbone	S-413	M8	65	Cap Allen	1	8mm	Nyloc	1	8mm	Standard	Steel	2
Rear Outboard Lower Wishbone	S-414	M8	50	Cap Allen	1	8mm	Nyloc	1	8mm	Standard	Steel	1
Lower Wishbone Damper Bracket	S-415	M6	30	Button	2	6mm	Nyloc	2	N/A	N/A	N/A	N/A
Rear Track Rod	S-416	M8	50	Cap Allen	1	8mm	Nyloc	1	8mm	Standard	Steel	1
RH/ LH Rear Track Rod Lock Nuts	S-417	N/A	N/A	N/A	N/A	8mm	Lock Nut RH/LH	2	N/A	N/A	N/A	N/A
Steering Rack	S-21	M12	100	Cap Allen	2	12mm	Nyloc	2	12mm	Standard	Steel	4
		M5	16	Button	8							
Switch Panel Covers	S-22	M5	12	Button	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gear Lever Selector Unit	S-24	M6	30	Cap Allen	4	N/A	N/A	N/A	6mm	Penny	Steel	4
Fire Extinguisher/ Battery Cover	S-23	M5	16	Cap Allen	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Safety Belt	S-25	M8	30	Cap Allen	4	N/A	N/A	N/A	8mm	Nordlock	Steel	4
Driver Kill Switch	S-26	M6	40	Cap Allen	2	6mm	Flanged Nyloc	2	N/A	N/A	N/A	N/A
Seat to Chassis	S-27	M8	25	Button	8	8mm	Standard	4	N/A	N/A	N/A	N/A
						8mm	Nyloc	4				



Bolt Set Name	Bolt Set Number	Bolt Description				Nut Description			Washer Description			
		Bolt Diameter	Bolt Length	Bolt Type	QTY	Diameter	Type	QTY	Diameter	Type	Material	QTY
Pedal Box Base to Chassis	S-28	M8	25	Cap Allen	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Throttle Pedal Rocker	S-29	M5	25	Hex	1	5mm	Nyloc	1				
Pedal to Pedal Box Base	S-210	M8	50	Cap Allen	1	8mm	Nyloc	1	8mm	Standard	Steel	2
Master Cylinder to Pedal Box Base	S-211											
Throttle Cable Wire Locker	S-212											
Fuel Regulator Housing Mounting Bolts	S-32	M5	50	Cap Allen	4	N/A	N/A	N/A	5mm	Standard	Nylon	4
		M5	8	Button	4				5mm	Standard	Steel	4
Access Panel Mounting Bolts	S-33	M5	18	Button	12	N/A	N/A	N/A	5mm	Standard	Nylon	12
Fuel Regulator O-Ring Kit	S-34											
Front Fender to Centre Section	S-51	M5	12	Countersunk	8	5mm	Nyloc	8	5mm	Countersunk	Plastic	8
Rear Fender to Centre Section	S-52	M5	12	Countersunk	9	5mm	Nyloc	9	5mm	Countersunk	Plastic	9
		M5	16	Countersunk	3	5mm	Floating Nyloc	3				
Centre Section to Chassis	S-53	M5	12	Countersunk	8				5mm	Countersunk	Plastic	8
Brake Light	S-54	M5	12	Countersunk	5	5mm	Nyloc	5	5mm	Countersunk	Plastic	5
Mounting Front Floor	S-55	M5	16	Button	19	5mm	Nyloc	12	5mm	Penny	Steel	30
Diffuser to Chassis	S-56	M5	16	Countersunk	4	5mm	Nyloc	2	5mm	Penny	Steel	6
		M5	16	Button	6							
Strakes to Diffuser	S-57	M5	12	Button	8	5mm	Nyloc	8				
	S-58	M10	100	Cap Allen	2	10mm	Standard	2	10mm	Standard	Steel	2

**SYNERGY**

Diffuser to Side Mount						10mm	Flanged Standard	2	10mm	Penny	Steel	2
Adjustable Wing Mount to Wing Mount	S-59	M6	20	Button	4	6mm	Nyloc	4				
Wing Mount to Bodywork Attachment Plate	S-510	M5	16	Button	4	5mm	Nyloc	4				

## Top Hats Description

Item Number	Part Number	Description	QTY
TH-1	SC-04-041-0260	Front Wishbone Outboard Upper/ Rear Track Rod	2
TH-2	SC-04-041-0261	Front Wishbone Inboard	4
TH-3	SC-04-041-0262	Front Wishbone Outboard Lower	2
TH-4	SC-04-041-0263	Rear Wishbone Inboard	4
TH-5	SC-04-041-0264	Rear Wishbone Outboard Upper	2
TH-6	SC-04-041-0265	Rear Wishbone Outboard Lower	2