USER GUIDE

VERSIONS

Version	Date	Author	Comments
A	06/05/2021	C. Dupuy	Creation
B	30/07/2021	C. Dupuy	Rear damper rebound correction, rear toe and camber spacer chart added.
C	07/12/2022	C. Dupuy	Corrections, adding toe in mm, power / torque curve, Wintax User, Soft 12.2.2.23 TMS

Info: New content from last version in yellow

CONTENT TABLE

1. FOREWORD

Dear customers,

The whole Opel Motorsport and Peugeot Citroën Racing Shop team thank you for your acquisition of an Opel Corsa Rally4.

The trust you place in us commits us daily.

Our user guide aims to get you familiar with your car as quickly as possible. Here you will find detailed information on the mechanical and electronic components of the Corsa Rally4, as well as information on its operation.

If you were in need of more information, our technical and commercial support teams are at your disposal.

We wish you maximum pleasure, performance and success with the Opel Corsa Rally4.

2. OPEL MOTORSPORT CONTACTS

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2.2. COMMERCIAL SUPPORT

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2 rue Gay Lussac
95500 GONESSE
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2.3. STELLANTIS MOTORSPORT MEDIA LIBRARY

Since September 2022, the FTP server has been replaced by the Stellantis Motorsport media library.

To access to the documentation, simply click on the link and then register.

After validation on our part, it will be possible to access the documentation of the selected cars.

https://docs.stellantis-motorsport.com/

For any modification to the car's list, please contact the technical support.

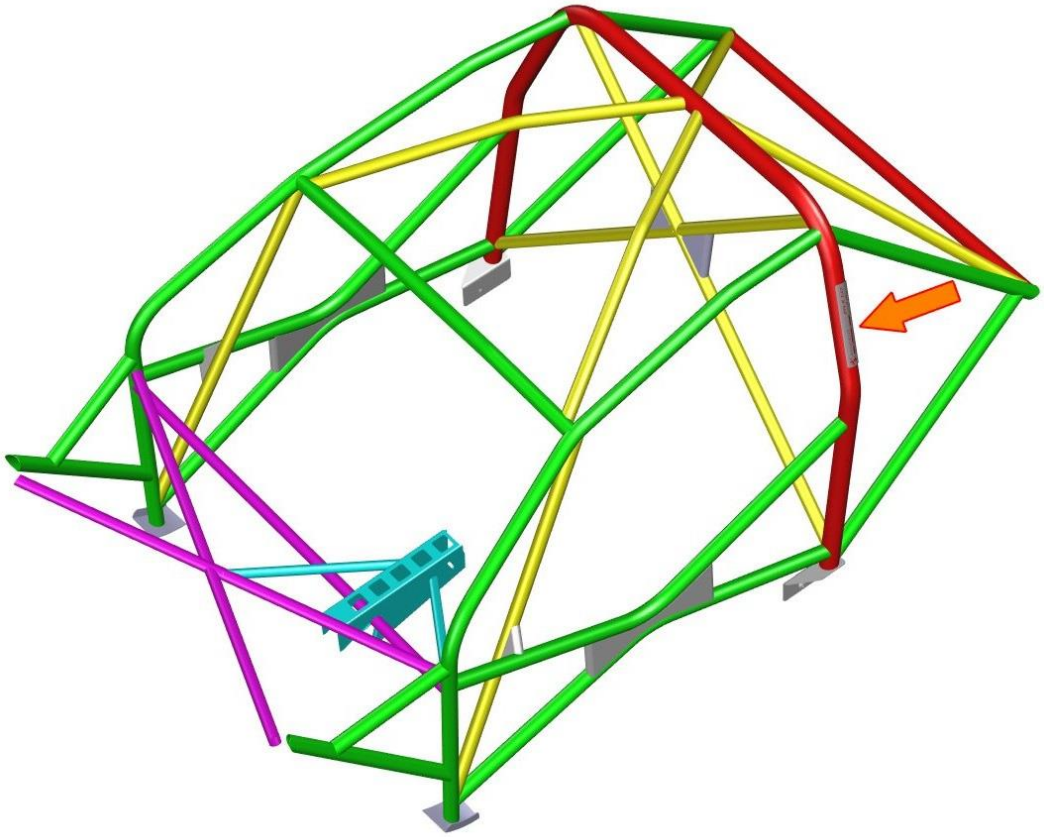
3. CAR PRESENTATION

3.1. GENERAL DIMENSIONS

General dimension (according to homologation form A-5781)	
Total length:	4052 mm
Total width:	1742 mm (w/o mirrors)
Wheelbase:	2553 mm
Front overhang:	821 mm
Rear overhang:	678 mm
Total minimum FIA weight:	1080 kg
Balance front / rear:	61% / 39%
Fuel tank capacity:	63 L

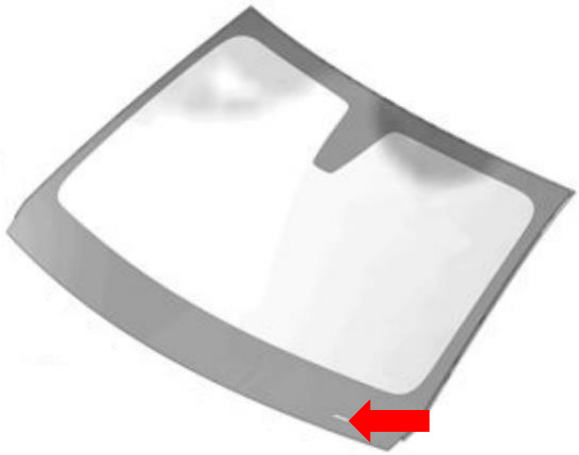
3.2. ROLLCAGE IDENTIFICATION

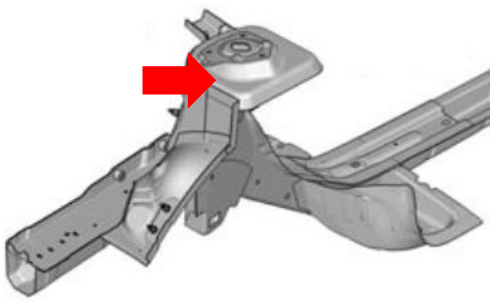
The rollcage number (Corsa-R XXXX) is indicated on a plate welded to the main roll bar behind the B-pillar.



3.3. CHASSIS IDENTIFICATION – VIN

The chassis identification number is located on two stickers, one behind the windscreen and one on the driver centre pillar.
A plate with the engraved VIN number is welded on the left damper mount.





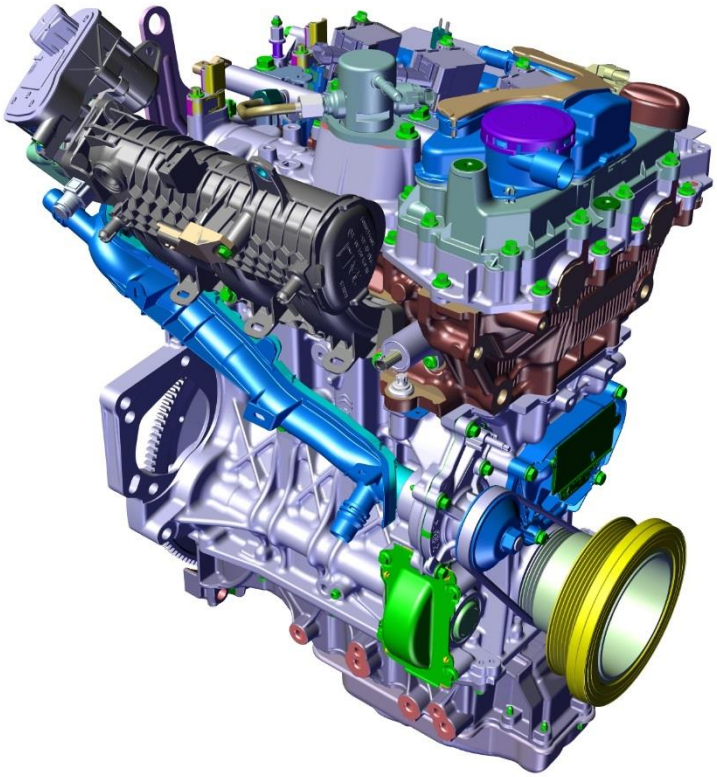
4. A00 - ENGINE

4.1. GENERAL INFORMATION

4.1.1. Characteristics

The main characteristics of the Opel Corsa Rally4 engine are:

Technical data	
Type	Straight-three, DOHC, 12v
Capacity	1199 cm^3
Bore x stroke	75 mm x 90,5 mm
Maximum power	208ch @ 5450rpm
Maximum torque	290 Nm @ 3000rpm
Cooling	Water cooling with thermostat
Fuel	Unleaded 98
Turbo	Borgwarner – 30mm restrictor
Engine management	Magneti Marelli SRG 141



4.1.2. **Fuel consumption**

As a baseline, you can use the following values to calculate your fuel consumption.

Road : 13L/100km **Stage – Tarmac : 56L/100km** **Stage – Gravel : 60L/100km**

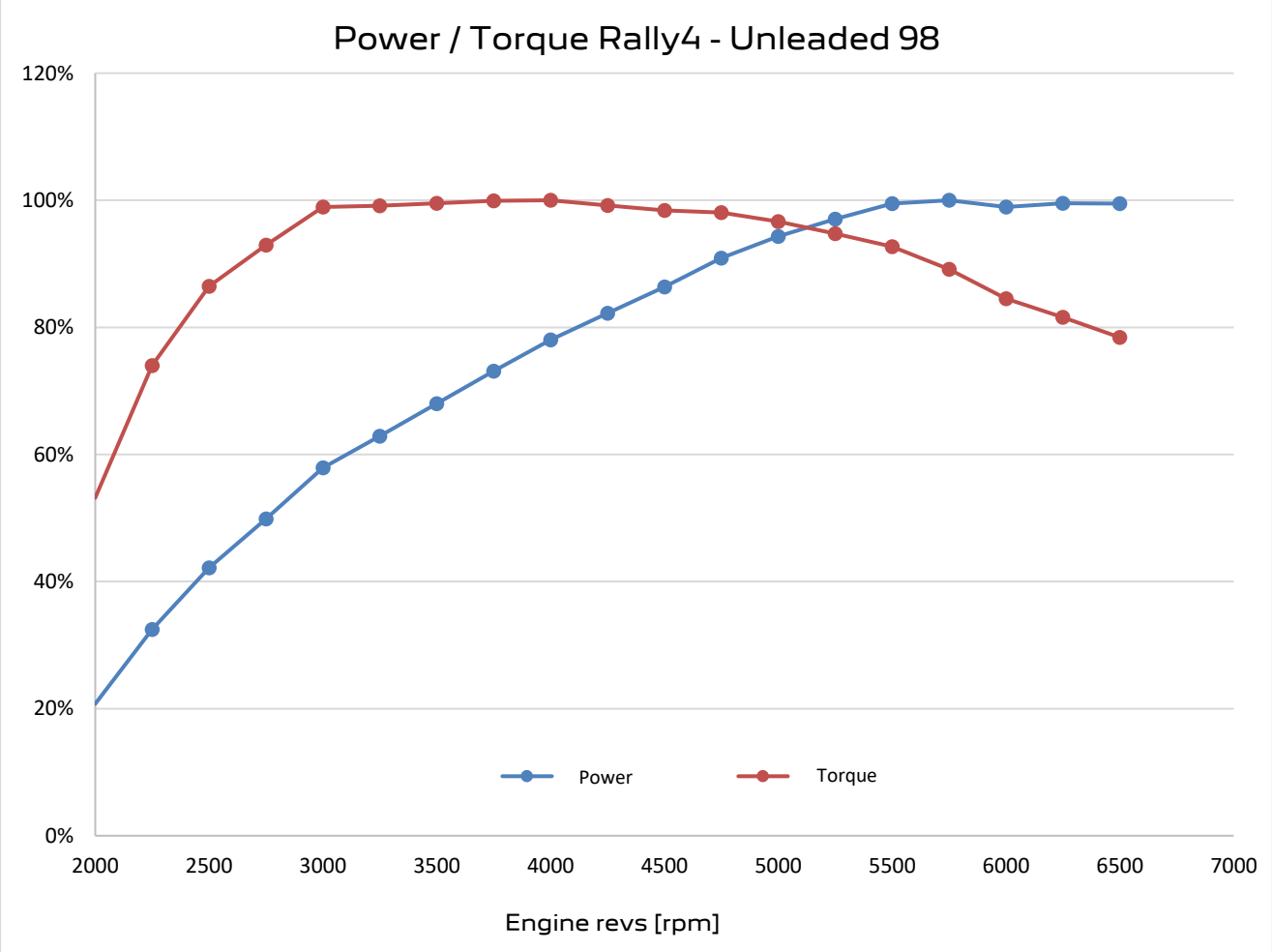
These values depend on the driving style, the profile of the roads as well as the average speed of the rally, it will be necessary thereafter to calculate your own consumption using data acquisitions.

We advise you to keep a safety volume of 10L in the fuel tank at all time.

IMPORTANT: Please be aware of a risk of surge from 6-7L remaining in the tank.

4.1.3. **Power / torque**

Below is an overview of the power and torque curve trends of the 208 Rally4 with commercial unleaded 98 fuel.



4.2. ENGINE RUNNING

4.2.1. First engine start

A procedure is used to calibrate the actuators: throttle pedal, throttle body and turbocompressor actuator (waste-gate).

This procedure must be carried out after replacement of any of the following part:

- Engine;
- ECU;
- Turbo and/or waste gate valve;
- Throttle body;
- Throttle pedal.

The procedure is detailed here: § 13.5.1

NOTA: On idle, the waste gate position (eWG) must not reach 100%.

4.2.2. Engine start

Check all levels before starting the engine.

Once all levels have been checked, follow the procedure below

Engine crank procedure to prime oil pressure:

This procedure needs to carry out after every oil change or after a period of 2h without running.

- Main switch ON, Power OFF.
- Ensure that the gearbox is in Neutral.
- Press on the HORN button and then hold START button. The starter will turn as long as you keep the start button pressed.
- Maintain Start button until oil pressure raises above 2bar, repeat if necessary.

We advise you no to touch the clutch pedal during this procedure.

Engine and transmission warm up:

- Main switch ON, Power ON, car on stands.
- Press the start button once (no need to keep the button pressed) to start the engine.
- Let the engine warm up on idle until the water temperature reaches 70 °C and the engine oil temperature reaches 60 °C.
- Switch to "page 4 – Check page" and check the coherence of the temperatures, pressures and voltage values.
- Get the car into first gear (press the lock button whilst pulling the gear lever) and accelerate to bring the engine to 4000/5000 rpm and shift up through all five gears.
- Shift back down to first gear at 3000 rpm (press the lock button whilst pushing the gear lever to reach the Neutral position). Then try the reverse gear and come back to neutral.
- Warm up the engine until the water fan turns on (starts at Twater = 92°C, stop at 90°C).

IMPORTANT:

In general, to protect the engine, never drive the car when Twater is < 70°C.

Engine oil is cooled by an air / oil exchanger, if the oil temperature does not reach 80 ° C, you must plan to partially cover the oil exchanger by using tape for example.

4.2.3. Final check

Once the warm up cycle is completed, we recommend to check for any possible leak (engine oil, gearbox oil, power steering oil) as well as reviewing the car's data.

If in doubt, do not hesitate to contact technical support and send data for analysis.

4.3. ENGINE IDENTIFICATION

The engine serial number is indicated on a plate positioned on the rocker cover.

4.4. FLUIDS

Engine oil:

- TOTAL Quartz INEO FIRST 0W30, reference PS97727A10
- Oil quantity: **3,5 L** +**1,5 L** (with oil radiator / circuit)

We advise to control the oil level at every service. The oil quantity is around 3,5L plus 1,5L in the cooling circuit.

The oil level must always sit between the ¾ and the max level of the gauge without exceeding it.

Coolant:

- PSA coolant -35°C 5L reference 1637756480
- Coolant quantity: **6,5 L**

We advise you to check the coolant level at every service. It must remain on the maximum line when the car is cold.

4.5. ACCESSORIES

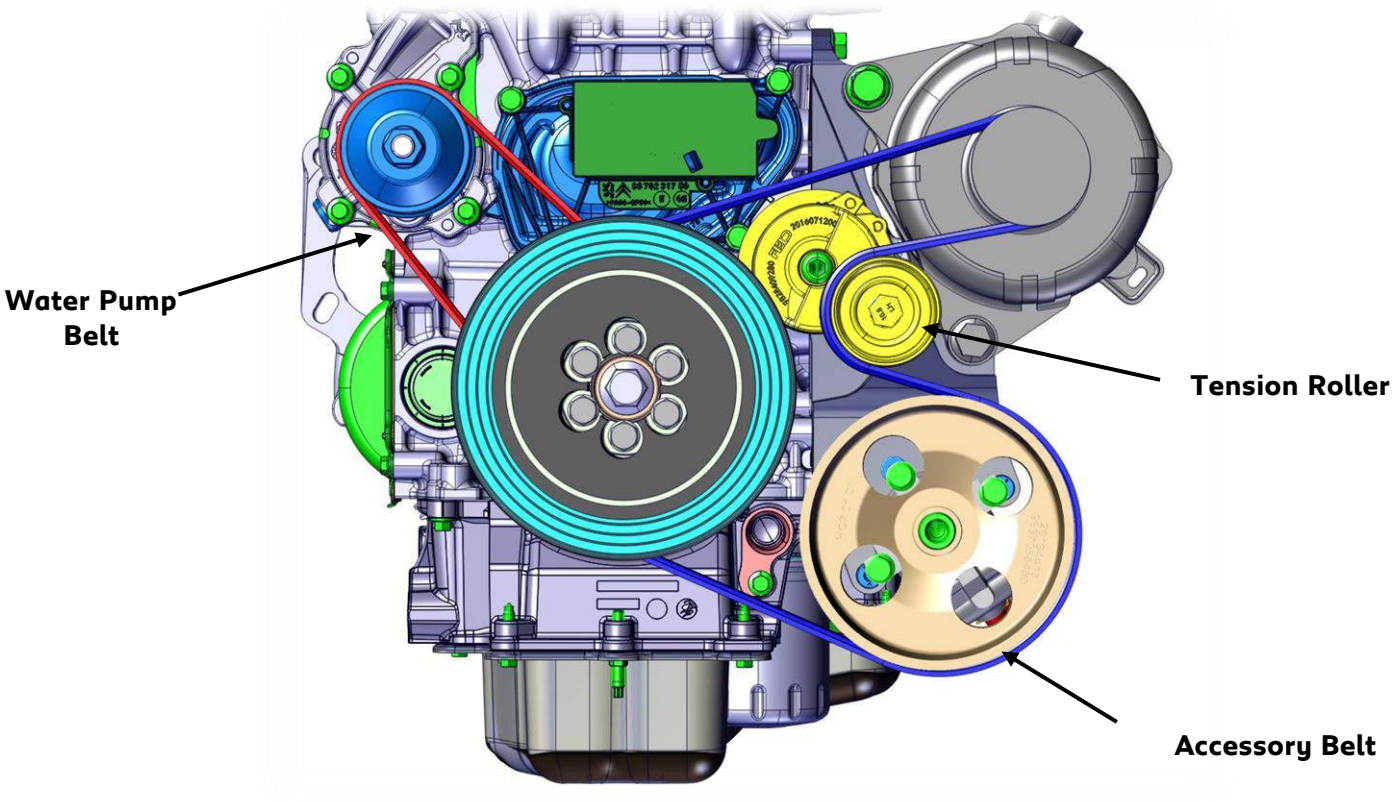
The engine is fitted with two accessory belts:

- One belt drives the alternator and the steering pump. The tension is managed by using a dynamic tensioner roller (counter clockwise to loosen the belt).

- A stretchy water pump belt. The tension is automatically set by the belt's elasticity. The use of the serial tool is strongly advised for its installation.

Reference	Designation	Quantity
5750VT	Accessory belt 1125 K6	1
1611426280	Dynamic tensioner roller	1
9675874180	Water pump belt	1
1607274880	Water pump belt fitting tool	1

Belt path:



4.6. SEALS

Every engine sold by Peugeot Citroën Opel Racing Shop is sealed. One seal is fitted on the rocker cover while another one is fitted on the oil sump.

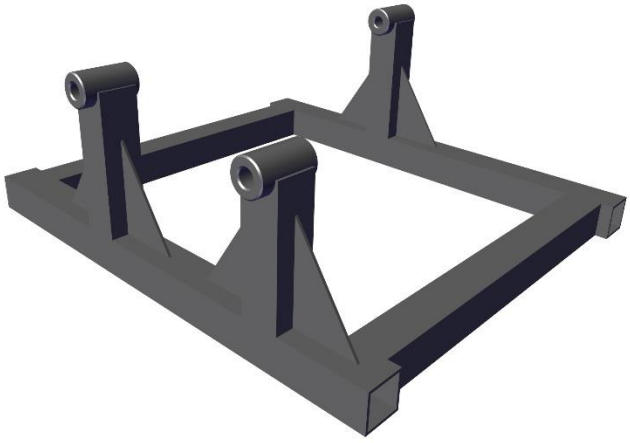
The turbos sold by Peugeot Citroën Opel Racing Shop are also fitted with a seal. This seal is mandatory to participate to the Rally Cup but is not recognized for FIA rallies.

4.7. REMOVAL / REFITTING OF THE ENGINE

Two lifting hooks are fitted to every engine delivered by Peugeot Citroën Racing Shop.

For accessibility reasons, we advise to fit / remove the engine with the Opel Motorsport engine mount instead of the serial support on the timing side.

A workshop support is available for sale; it allows an ideal maintenance of the engine assembled with its gearbox once the powertrain is out of the car.



Reference	Designation	Quantity
904647071A	Workshop engine mount	1
6925P9	Collar screw M10 x 60	2
6925W9	Collar screw M8 x 30	1

5. B00 – COOLING

5.1. WATER CIRCUIT

Opel Corsa Rally4 has two water circuits.

The first one for the water radiator, one for the water radiator equipped with a mechanical thermostat. The thermostat opens completely at 87 ° C, so there is no need to mask the water radiator.

At the same time, a second circuit includes the gearbox exchanger and the cockpit heating, which is not fitted with a thermostat and is therefore always open.

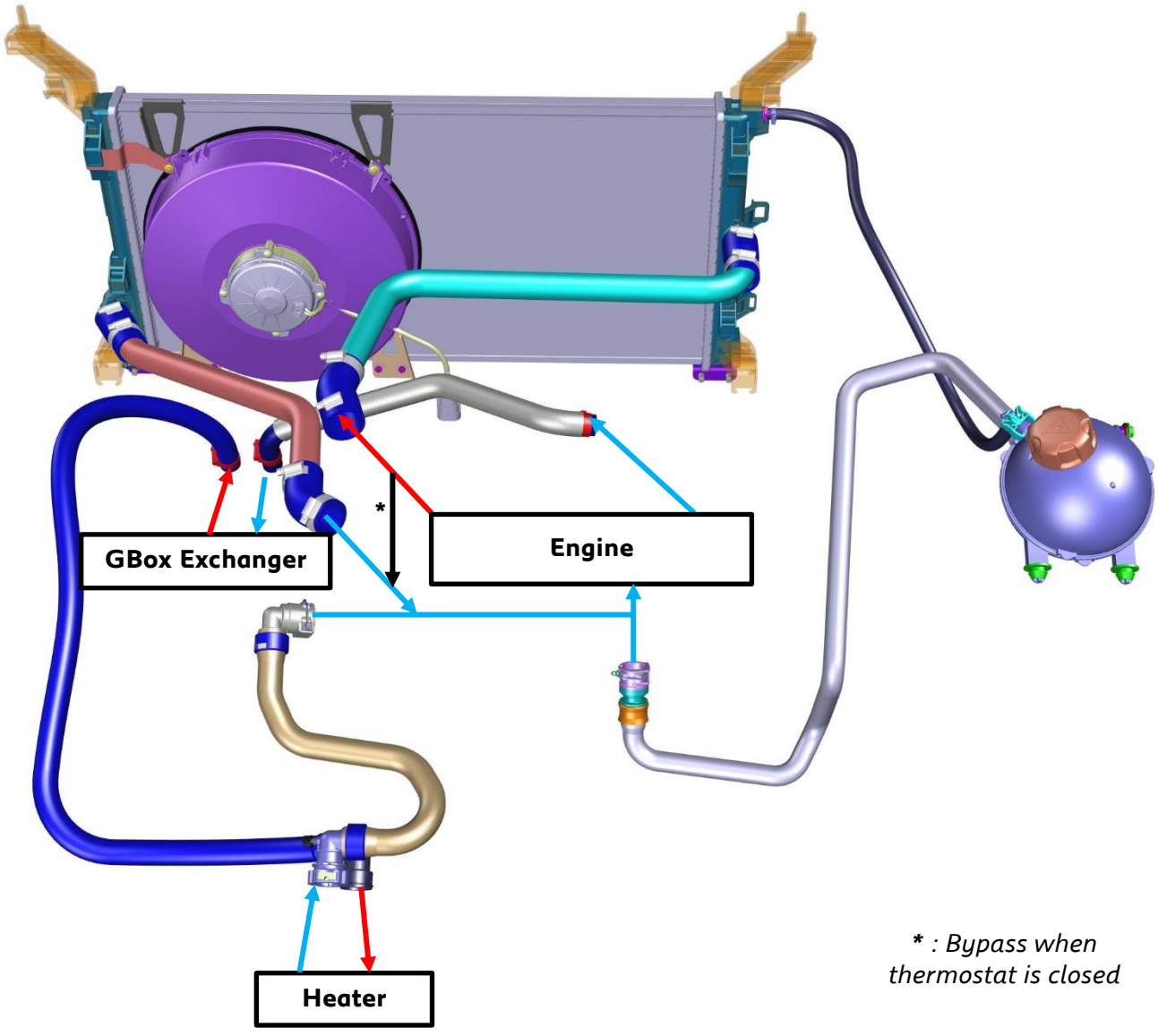
The water pump is mechanical and driven by an independent belt.

The radiator is fitted with a fan; it starts at 92 °C and stops at 90 °C.

There is no water pressure sensor; however, the expansion tank cap is rated at 1.4bar.

IMPORTANT: the radiator is homologated, do not drill the radiator.

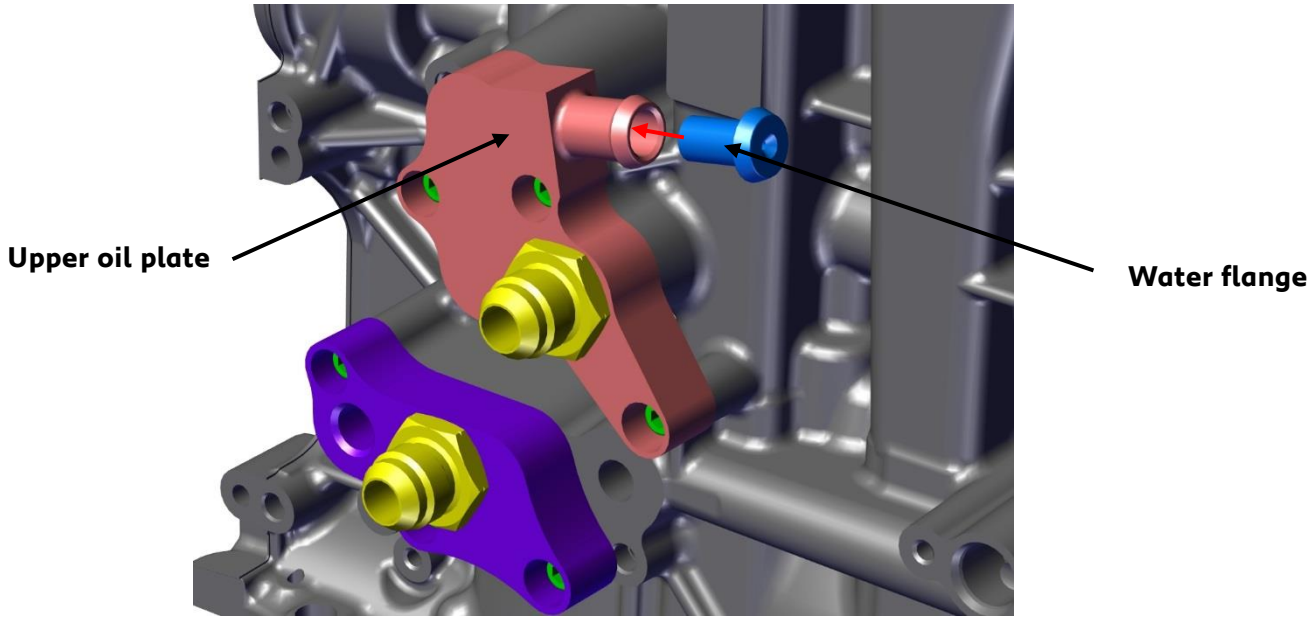
As an option, it is possible to add a second radiator fan since 1st of January 2021. The part list is available on the nomenclature. The second fan starts at 105°C and stops at 102°C.



** : Bypass when thermostat is closed*

Attention:

When disassembling the water hose from the engine to the gearbox exchanger, it is possible that the water flange remains in the hose. It is imperative to replace it in the upper oil plate before reassembling the hose.



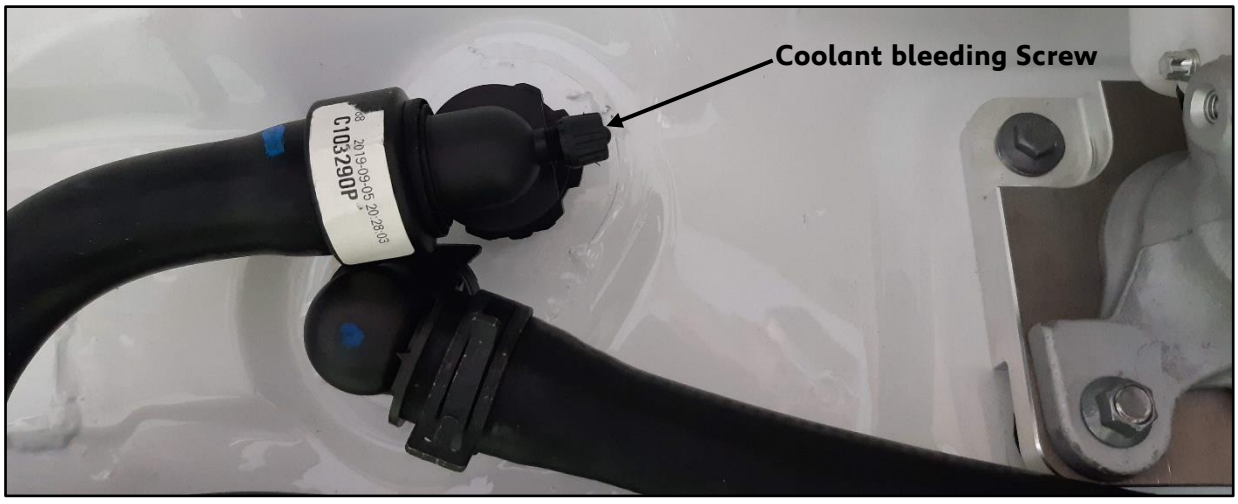
Cooling circuit:

Fill the entire cooling circuit (about 6.5L) then warm up the car without putting the cap on the degassing tank.

Regularly open the bleed screw on the heating lines to release air from the circuit.

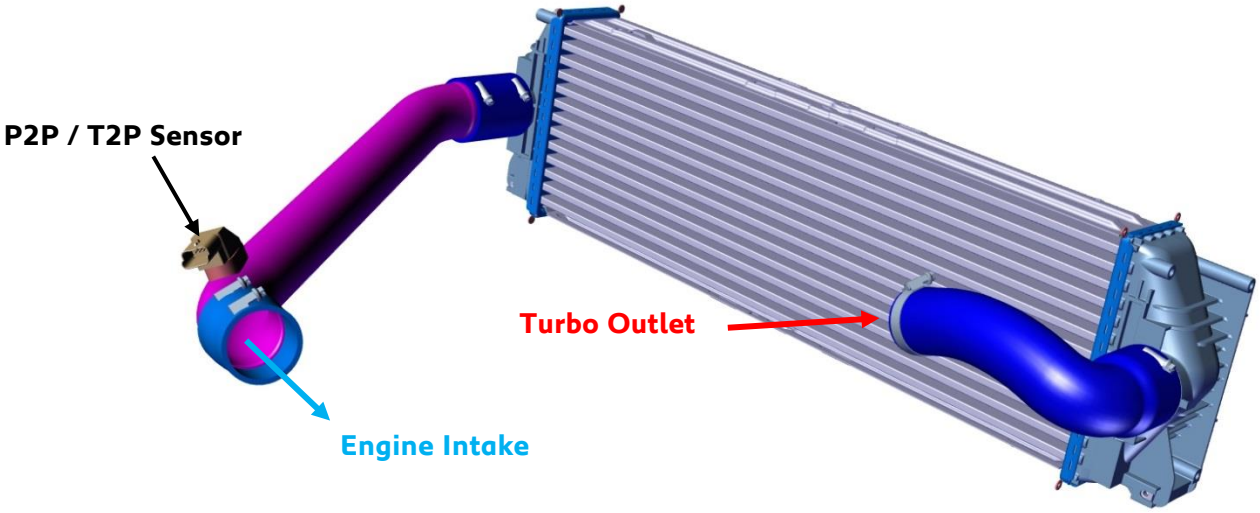
Always maintain the coolant level above the maximum during the bleeding procedure, add liquid at any time if necessary.

Continue to warm up the engine until the fan starts (92 °C).



5.2. TURBOCHARGING CIRCUIT

The air-to-air intercooler is located on the front face above the water radiator.



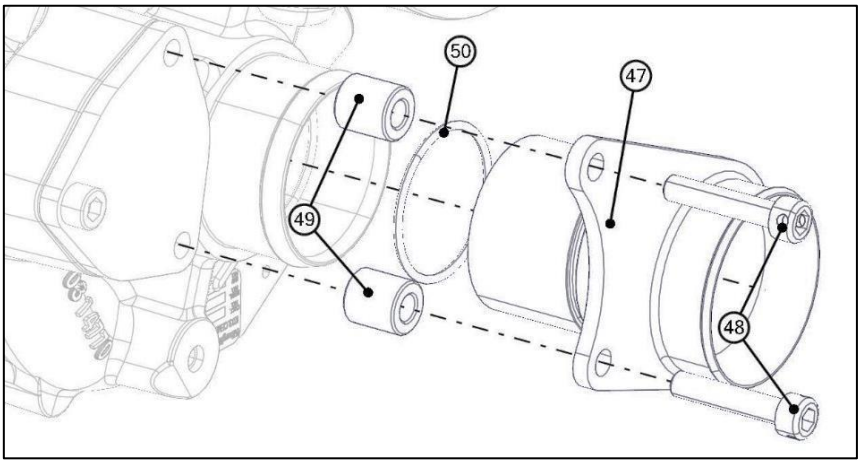
To obtain the maximum efficiency, it is important to check the good condition as well as the good installation of the air ducts.

It is also important to check that the air box is correctly fitted in the front bumper.

IMPORTANT: Never turn the engine off as long as the alarm T_turbo is displayed on the dashboard.

From **1st of January 2021**, a 30mm turbo restrictor must be fitted to all cars in the Rally4 category, regardless of the competition.

All information are available on the A27 manual.

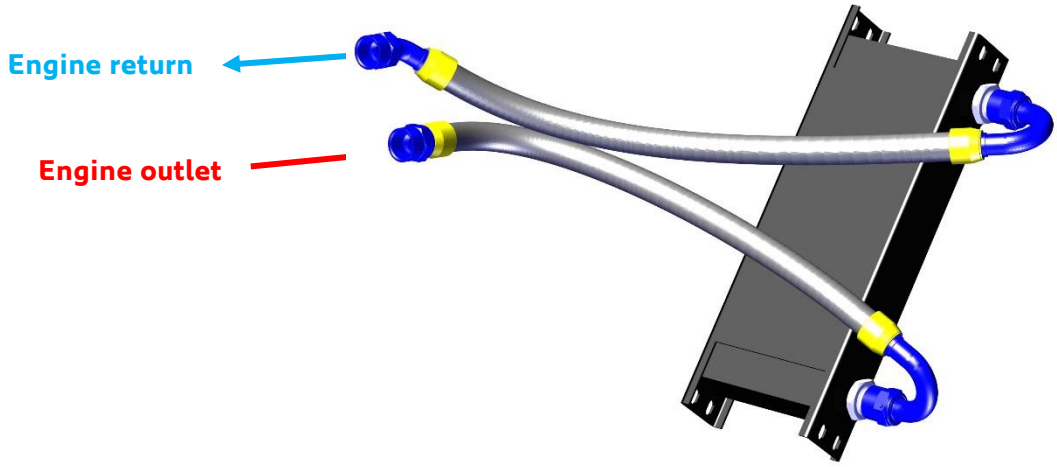


5.3. ENGINE OIL COOLING

An oil radiator is fitted at the front right corner of the Corsa Rally4 front face.

If the oil temperature drops below 70°C (long road sections or cold rallies), it might be necessary to mask the radiator with tape (ex : reinforced tape).

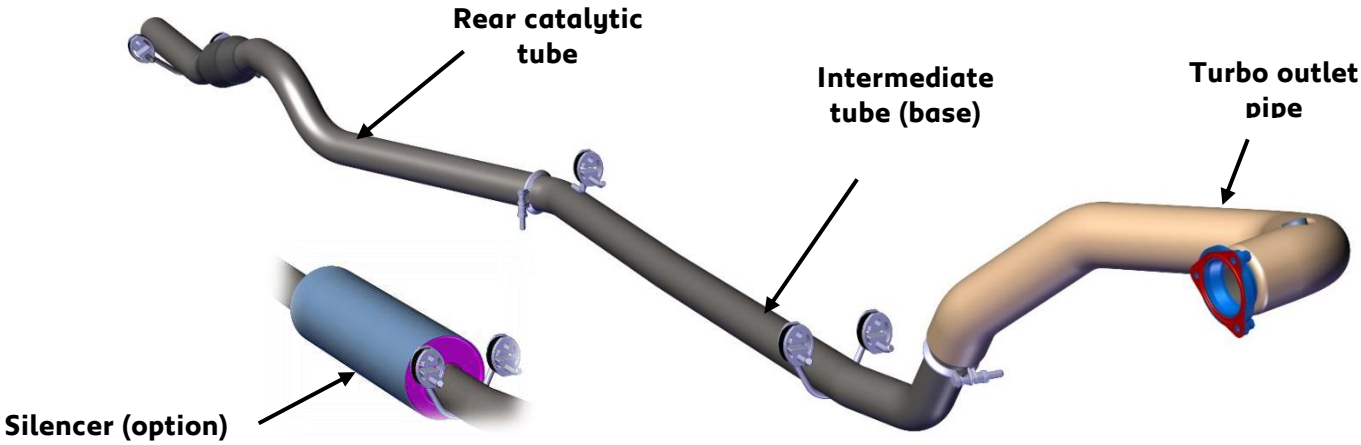
For optimal operation, the engine oil temperature must remain between 95°C and 125 °C.



5.4. EXHAUST

The turbo is mounted directly on the engine via a flange, the manifold being integrated into the cylinder head.

An intermediate line, fitted with a silencer is available as an optional extra.



Make sure that the connections as well as the thermal protections are always in good condition.
The catalytic converter, at the end of the exhaust line, is the following model: ROSI 95032 100 2N.

The catalytic converter is approved by the FIA on the technical list #8 and registered under the registration form FFSA-005-50321/95032 from July 2001.

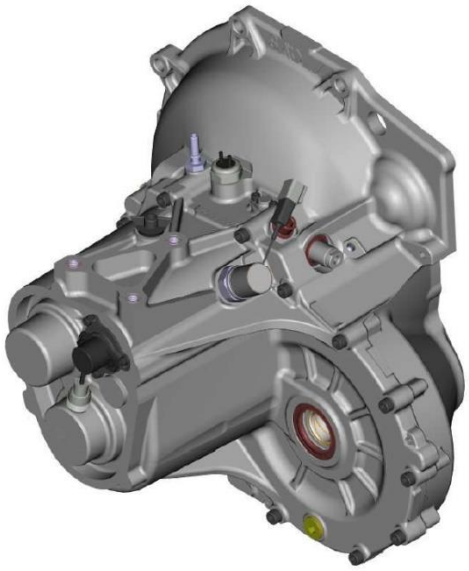
The homologation form can be purchased from the country federation.

6. C00 – TRANSMISSION

This chapter will give you general information, for more information please refer to the Sadev Technical guide available on the FTP server.

6.1. GEARBOX

The Corsa Rally4 is fitted with the Sadev ST82LW 5 speed gearbox.



6.1.1. Gear Ratio

Only one set of gear ratio is homologated and therefore sold by Peugeot Citroën Racing Shop.

	1st	Ref : D829063N01915F5F	2nd	Ref : D829063N01915F5F	3rd	Ref : C8214N1725915F	4th	Ref : C8214N2226915F	5th	Ref : C8214N2120915F
Primary shaft	12		14		17		22		21	
Secondary shaft	32		27		25		26		20	

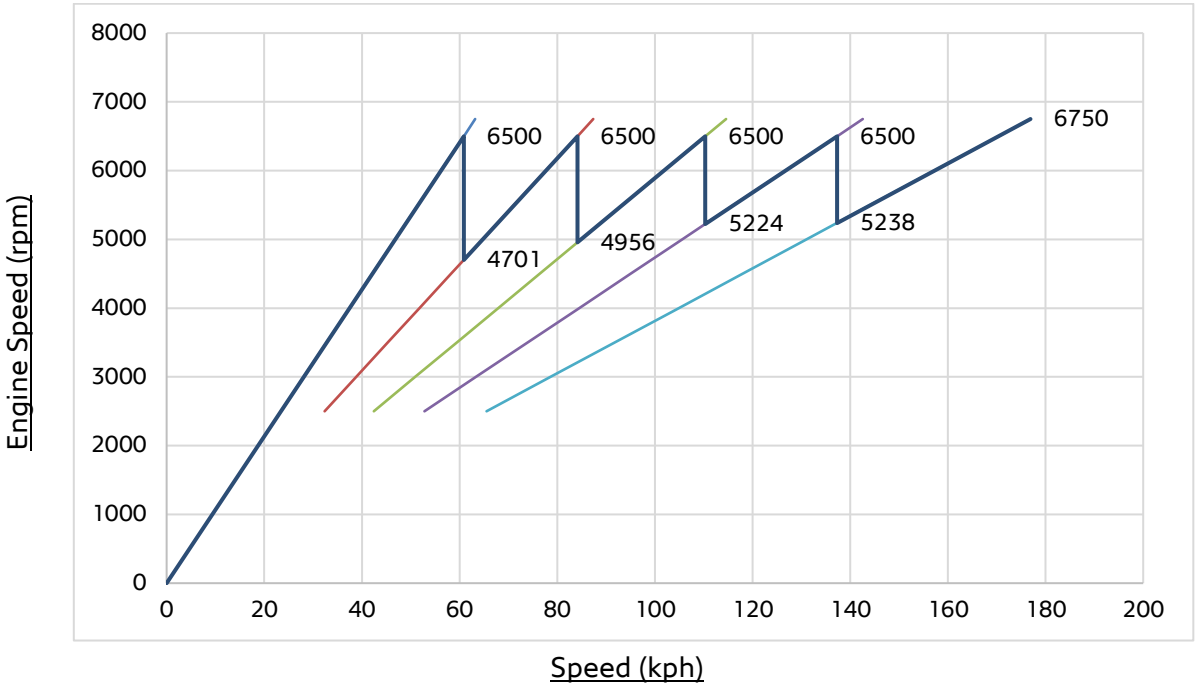
6.1.2. Final Drive

Only one final drive is homologated and therefore sold at Peugeot Citroën Racing Shop:

FINAL DRIVES			Ref
Final drive	12	56	CPL12569062091

Please find below the abacus of the gear range, the circumference of the gravel and tarmac tires being very close, there is almost no difference of speed between the two surface specs.

Gear range



6.1.3. **Barrel sensor**

The gearbox is fitted with a barrel position sensor that send a voltage to the ECU as a function of the angle of the barrel and therefore of the gear engaged.

Barrel angle °deg	Voltage (V)	Gear
0	0.58	R
57.5	1.22	N
115	1.86	1
172.5	2.500	2
230	3.12	3
287.5	3.76	4
345	4.39	5

6.1.4. **Maintenance**

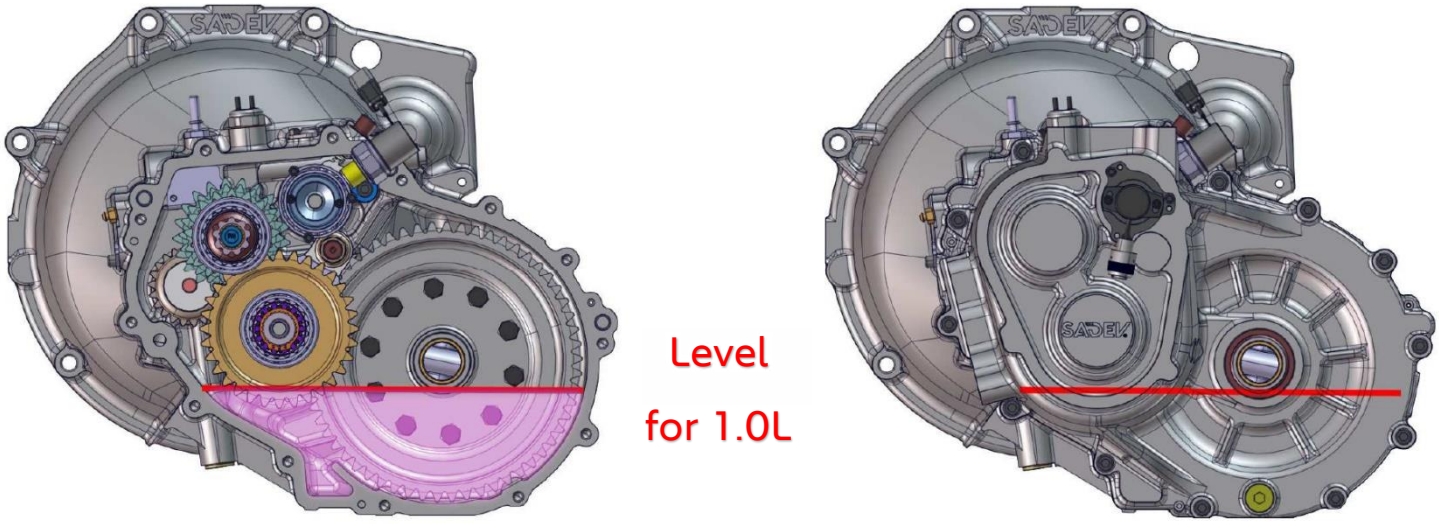
Each time the oil is drained, it is imperative to clean the magnetic cap as well as the gearbox strainer.

The recommended oil is the TOTAL H50168B, reference 1C2340626A (2L).

Capacity:

Gearbox + cooling system (new) = 1,1L

Gearbox only (oil change) = 1,0L



6.1.5. **Differential**

The differential preload is adjustable. It can be set by replacing the Belleville washer as well as the number of friction faces.

The number of friction faces (FF) can vary by switching a smooth disc and a friction disc in the disc pack assembly. You must always keep the same number of friction faces on each side of the differential.

We advise you to use a maximum of 12 FF (6+6) and a minimum of 8 FF (4+4).

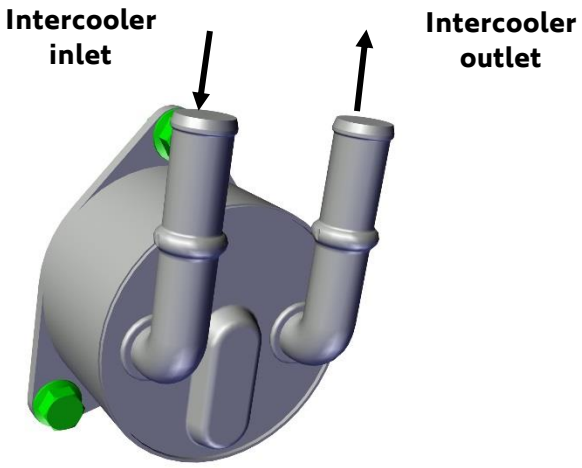
Only one set of differential ramps is available, but this set is machined with two different sets of ramps offset by 45°:

DIFFERENTIAL		
Version	1	2
Driving ramp angle	27°	42°
Braking ramp angle	57°	63°
Part number	F90623711 (Tarmac spec original equipment)	F90623711(gravel spec original equipment)

6.1.6. Gearbox cooling

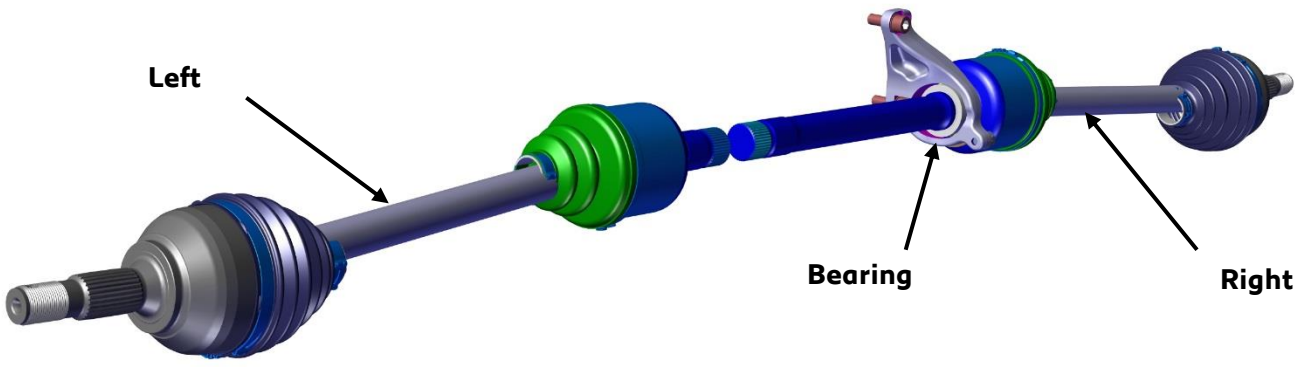
The gearbox oil is cooled/warmed up by an oil/water intercooler fitted at the front of the gearbox.

Under normal running condition the gearbox oil temperature ranges from 80 to 120°C.



6.2. DRIVESHAFTS

We advise you to control your driveshafts – and more precisely the boots – after each rally.



Caution: There is a specific assembly per road surface:

Tarmac Assembly

Spacer 12mm

Gravel Assembly

Tarmac assembly specificity: The driveshaft can not be fitted with the locking nut and pin in tarmac spec; we therefore advise to check the tightening torque of the driveshaft nut **after the first run** (400Nm) as well as **each service**.

Whenever possible, avoid hot-tightening the nut. Clean the thread and replace with new Loctite 648 if the tightening mark has moved more than approximately 1/6 of a turn.

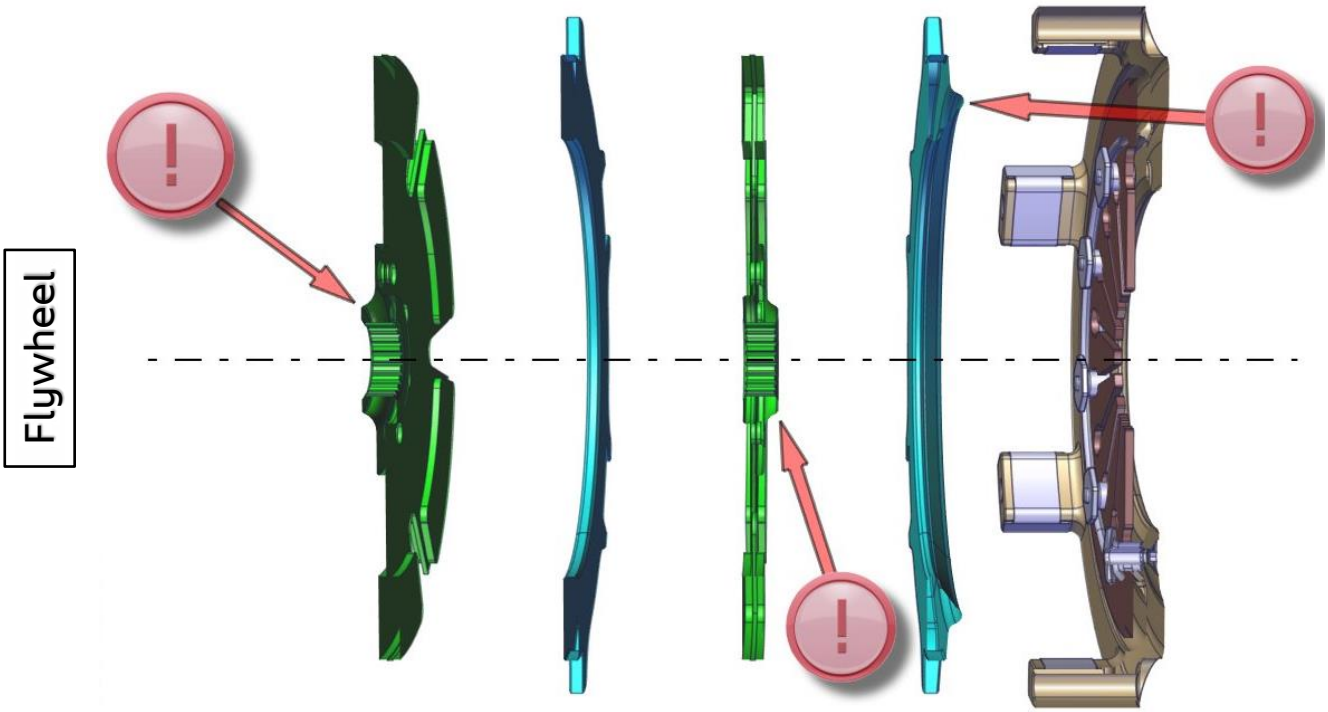
6.3. CLUTCH

The clutch on the Corsa Rally4 is from TM Performance.

It is a bi-discs clutch, each disc equipped with 6 ceramic pads.

6.3.1. **Assembly**

The clutch being equipped with two discs, a pressure plate as well as an intermediate plate, it is important to respect the order and the direction of assembly described below:

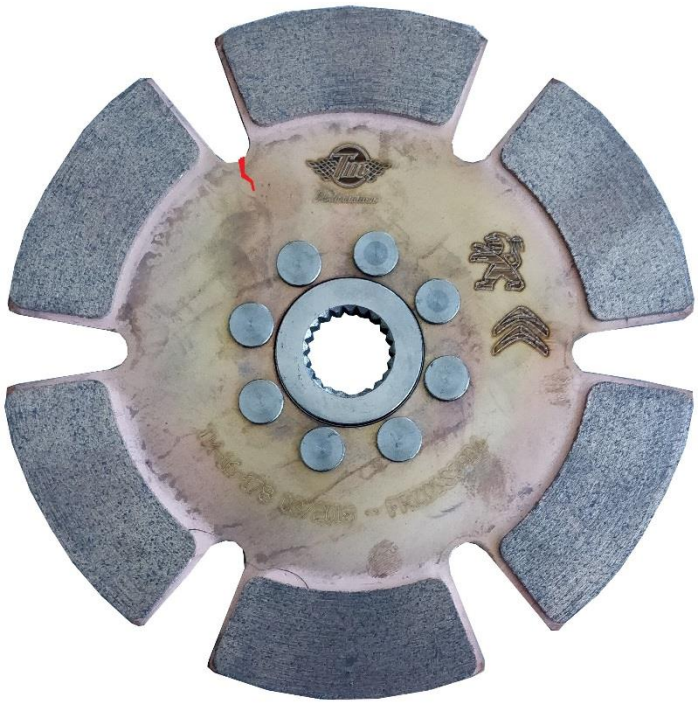


Before any assembly / disassembly, we advise you to mark the discs, the plates as well as the clutch mechanism in order to keep the same angular position:

6.3.2. **Inspection**

The minimum thickness of the clutch disc pads is 5.8mm (6.3mm new). Below this value, we recommend replacing the disc.

The disc must also be replaced if cracks appear at the base of the pads, as illustrated in the principle image below:

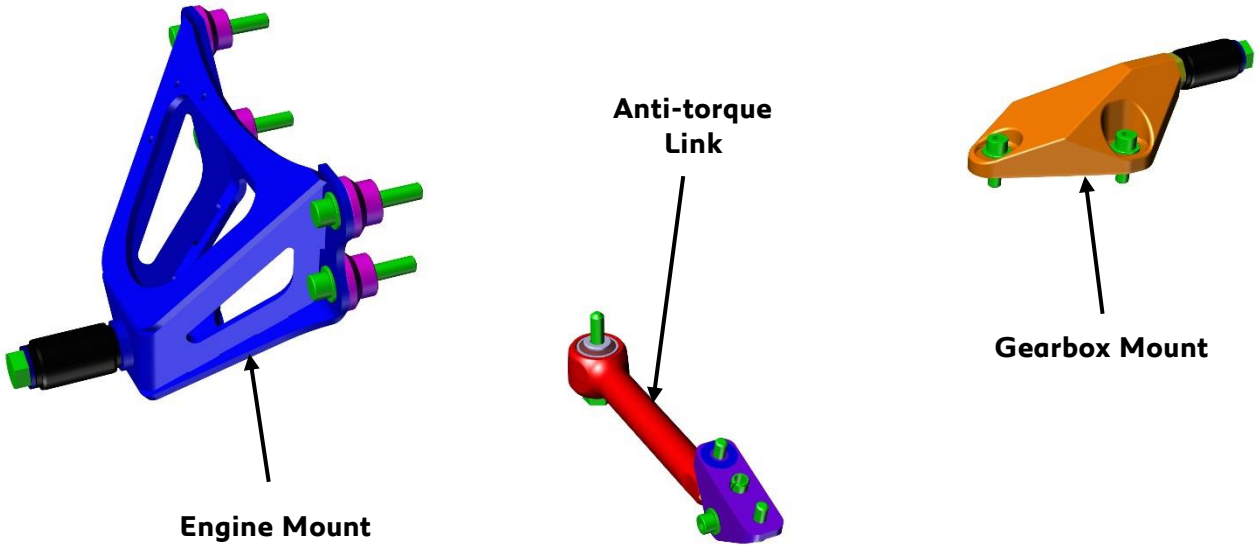


It is recommended to change the six fixing screws of the mechanism at each reassembly.

7. D00 – ENGINE MOUNTS

This car has three powertrain mounts: the engine mount, the gearbox mount and the anti-torque link.

Remember to regularly check the tightening torque of the screws and use markings to identify quickly any loosening.



To install the powertrain, or for any operation on the powertrain mounts, proceed as follows:

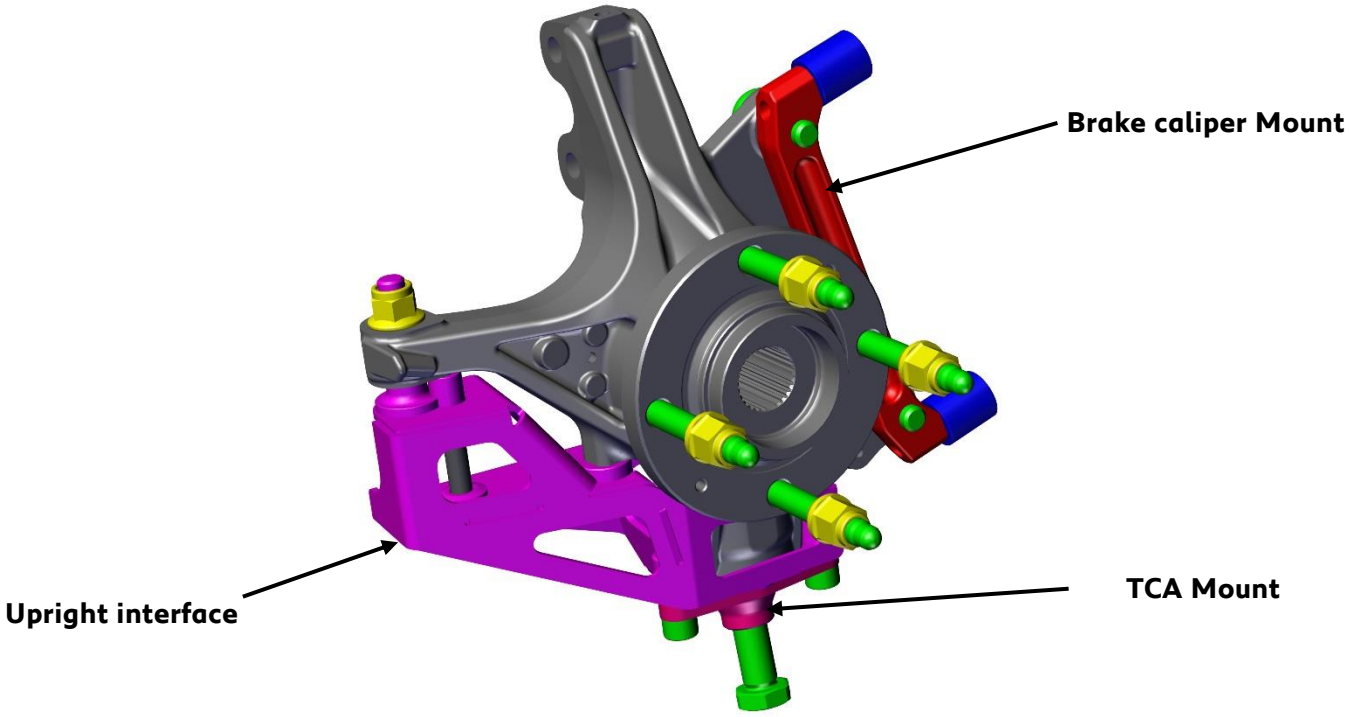
- Tighten the engine mount on the engine to the indicated torque,
- Approach the screws of the gearbox mounting plate on the box without tightening them
- Approach the screw passing through the chassis leg on the engine side without tightening them
- Approach the screw passing through the chassis leg on the gearbox side without tightening them
- Tighten the anti-torque link to the indicated torque,
- Tighten the screw passing through the chassis leg on the engine side to the indicated torque,
- Tighten the screw passing through the chassis leg on the gearbox side to the indicated torque,
- Tighten the screws of the gearbox mounting plate on the gearbox to the indicated torque.

8. E00 – SUSPENSION

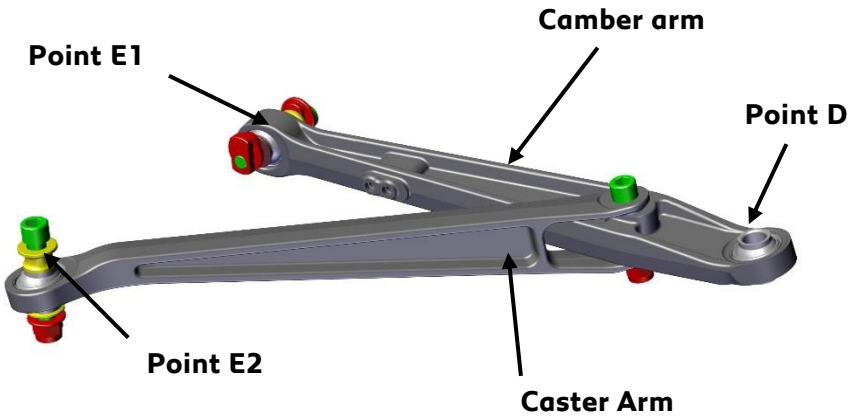
8.1. FRONT AXLE PRESENTATION

The front end of the Corsa Rally4 is of the McPherson type, with a reinforced subframe and ball-jointed wishbones.

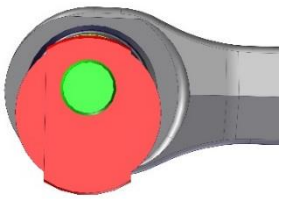
8.1.1. Front upright



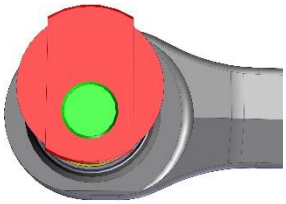
8.1.2. Wishbones



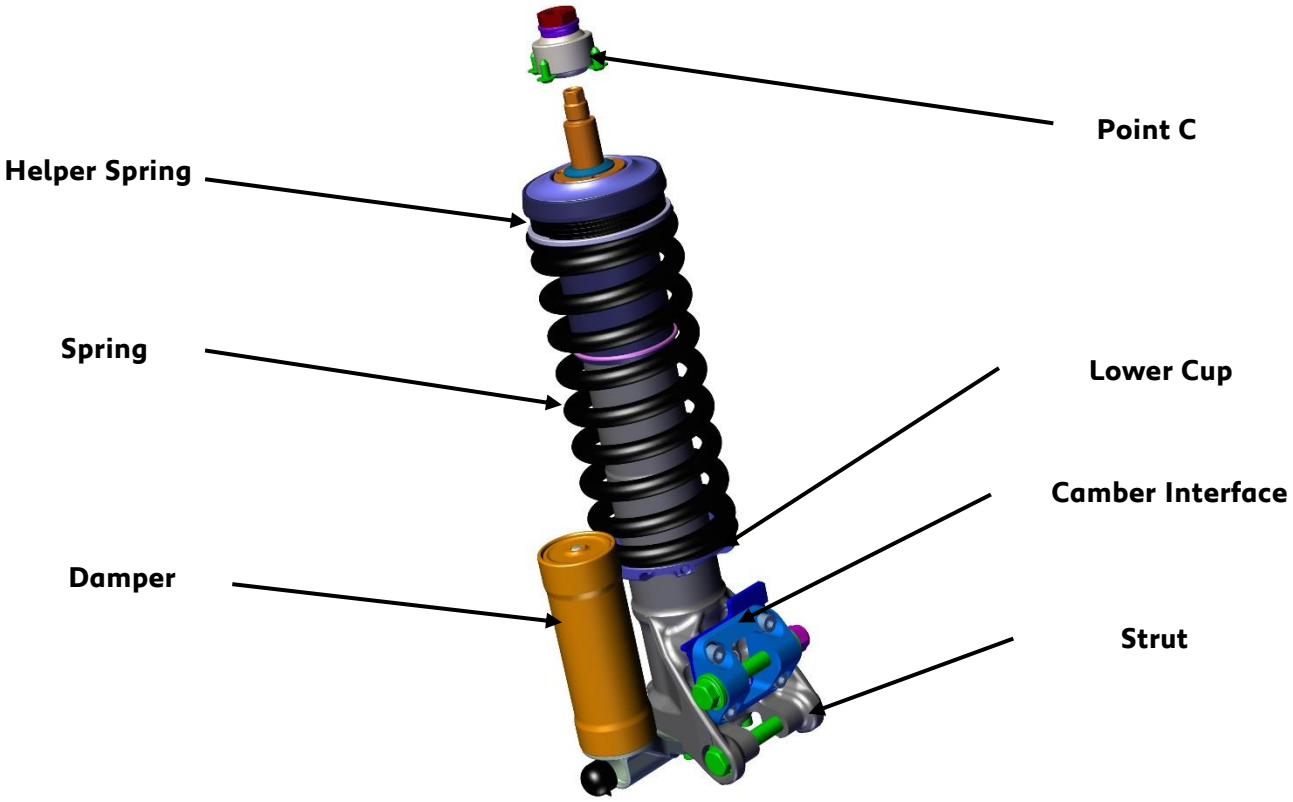
E1 High: Not used



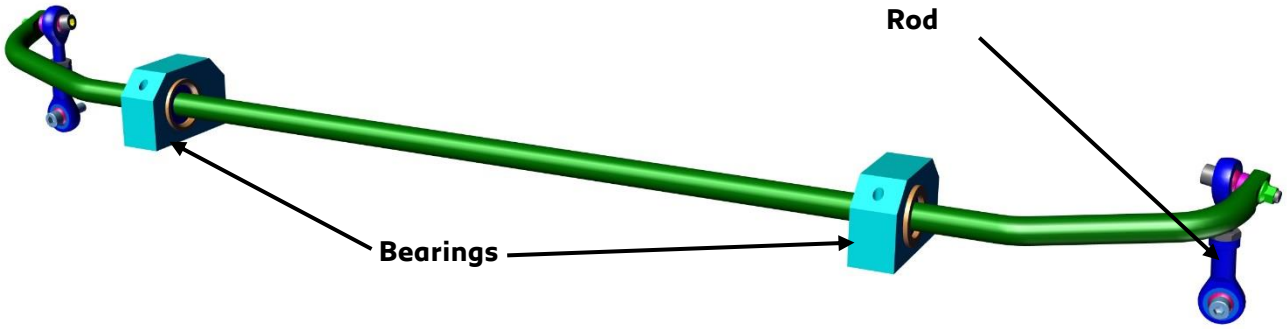
E1 Low: Recommended



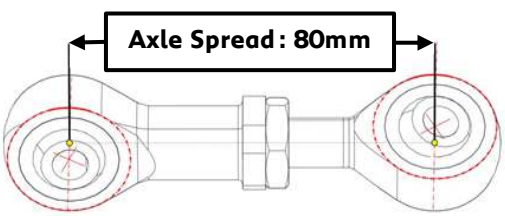
8.1.3. Front Coil-over damper assembly



8.1.4. Front anti-roll bar



Rod length pre-set: **80mm**

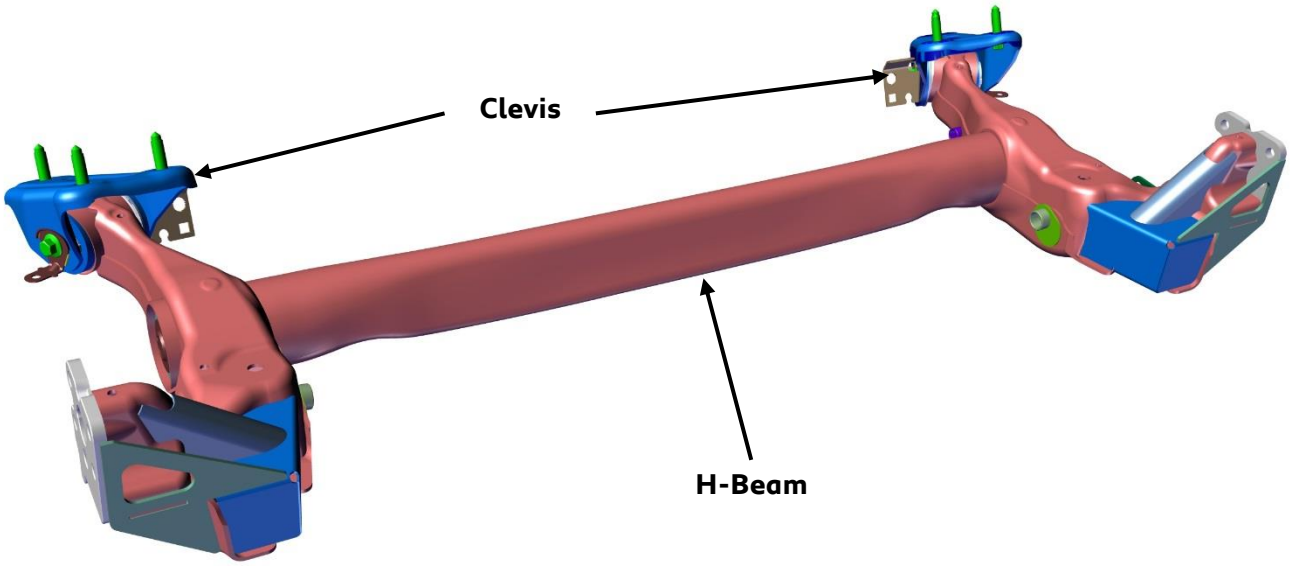


ARB diameter	Position	Antiroll stiffness (N.m/rad)
15 mm	In.	8 200
	Out.	10 200
18 mm	In.	17 200
	Out.	21 200
22 mm	In.	39 000
	Out.	47 000

8.2. REAR AXLE PRESENTATION

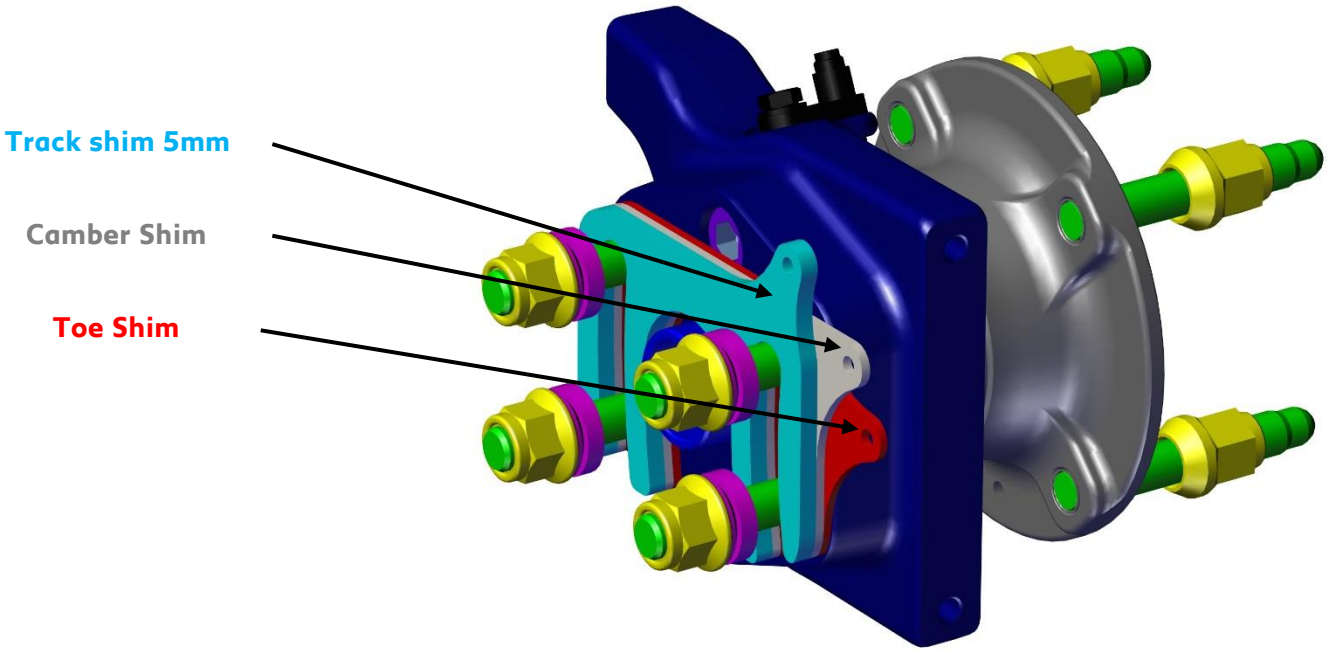
The rear axle is made of an reinforced H-beam with integrated anti-roll system.

8.2.1. Rear H-Beam



8.2.2. Rear Hub Carrier

Only one camber shim and one toe shim are allowed per side.



Camber spacer values:

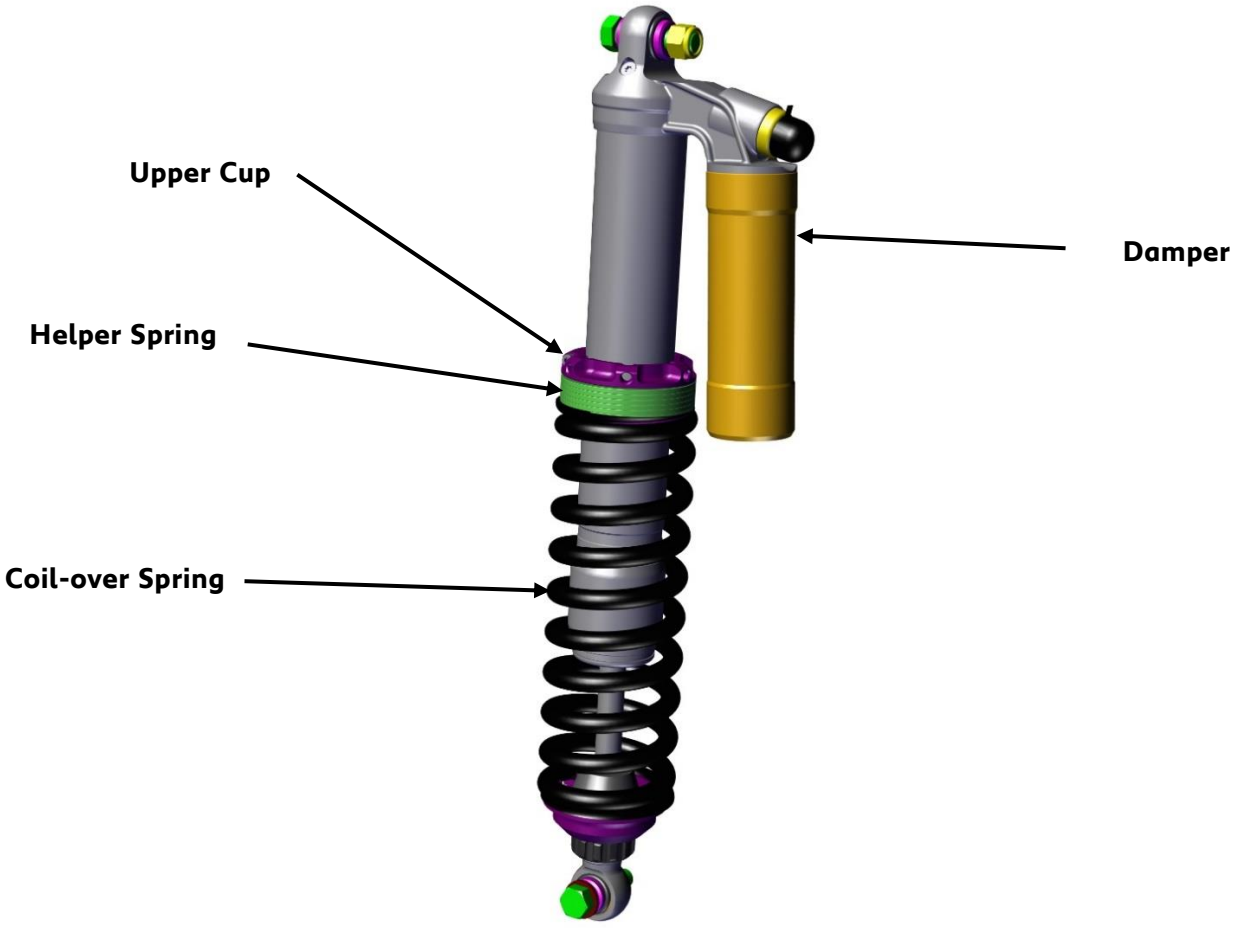
11	904636808A	0°40'
10	904636798A	0°32'
9	904636788A	0°25'
8	904636778A	0°17'
7	904636768A	0°10'
6	904636758A	0°02'
5	904636748A	-0°05'
4	904636738A	-0°13'
3	904636728A	-0°20'
2	904636718A	-0°28'
1	904636708A	-0°36'
N°	**Reference**	**Angle**

Toe spacer values:

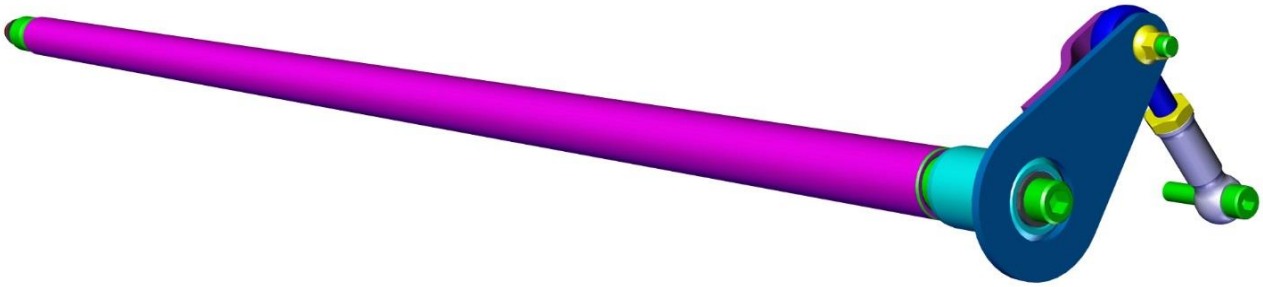
I	904636388A	0°33'	4,1	3,7
H	904636378A	0°25'	3,1	2,8
G	904636368A	0°17'	2,1	1,9
F	904636358A	0°09'	1,1	1,0
E	904636348A	0°01'	0,1	0,1
D	904636338A	-0°07'	-0,9	-0,8
C	904636328A	-0°15'	-1,9	-1,7
B	904636318A	-0°23'	-2,9	-2,5
A	904636308A	-0°31'	-3,9	-3,4
N°	**Reference**	**Angle**	**Mm (17")**	**Mm (15")**

Negative = IN / Position = OUT

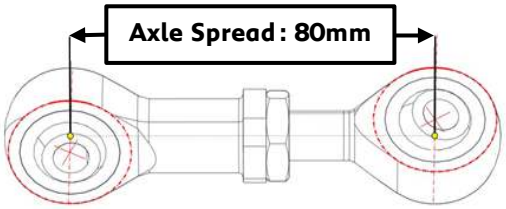
8.2.3. **Rear Coil-over damper assembly**



8.2.4. **Rear anti-roll bar**



Rod length pre-set: **80mm**



ARB diameter	Antiroll stiffness (N.m/rad)
-	30 600
19 mm	42 000
22 mm	52 000
24 mm	61 000

8.3. TARMAC / GRAVEL SPECIFIC FEATURES

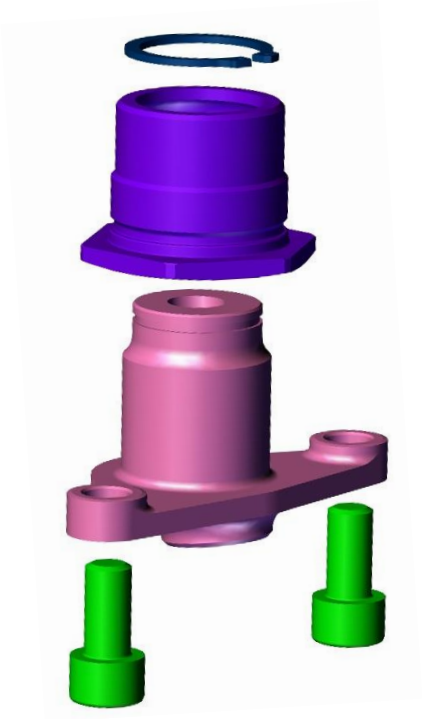
In order to go from one configuration to another it is necessary to change / mount / dismantle the following parts:

- Differential ramps
- Point D supports
- Front and rear damper assembly,
- Anti-roll bars
- Front brake discs with their spacers,
- Front brake caliper spacers,
- Rims and tires,
- Rear wheel scrapers,
- Underbody protections,
- Driveshaft spacers, nuts and pins.

Please find below the illustration of the two point D supports:

Tarmac point D assembly

Gravel point D assembly



8.4. DAMPER SETTINGS

The Corsa Rally4 is equipped with Öhlins shock absorbers adjustable in three ways: low speed compression, high speed compression and rebound.

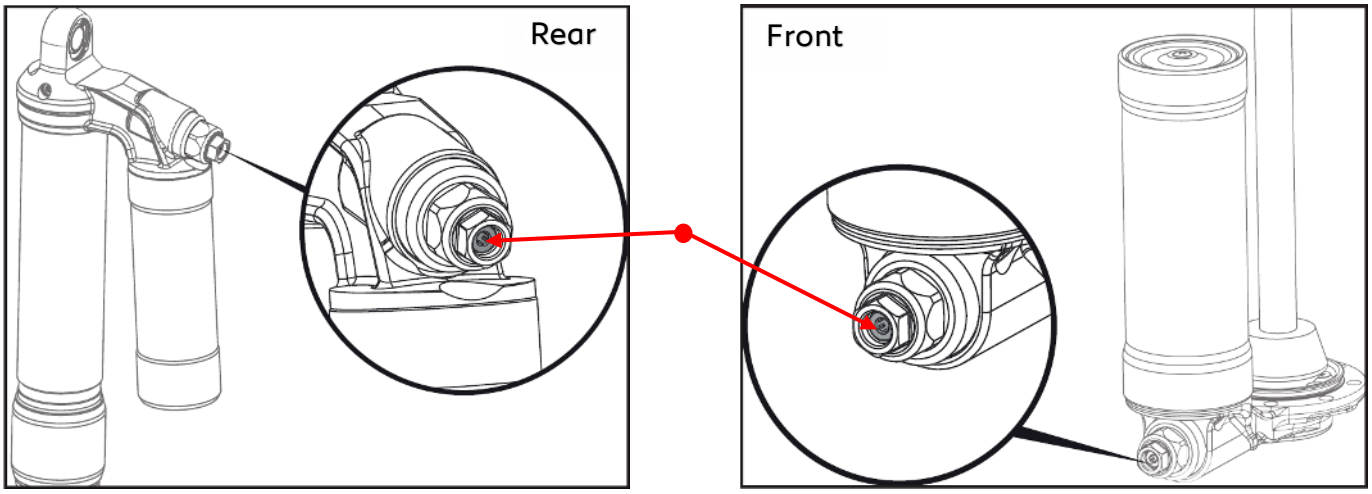
- (c) Compression Low Speed : 40 clicks
- (C) Compression High Speed : 50 clicks
- (D) Rebound : 60 clicks

More information is available in the Öhlins technical documentation on the FTP server.

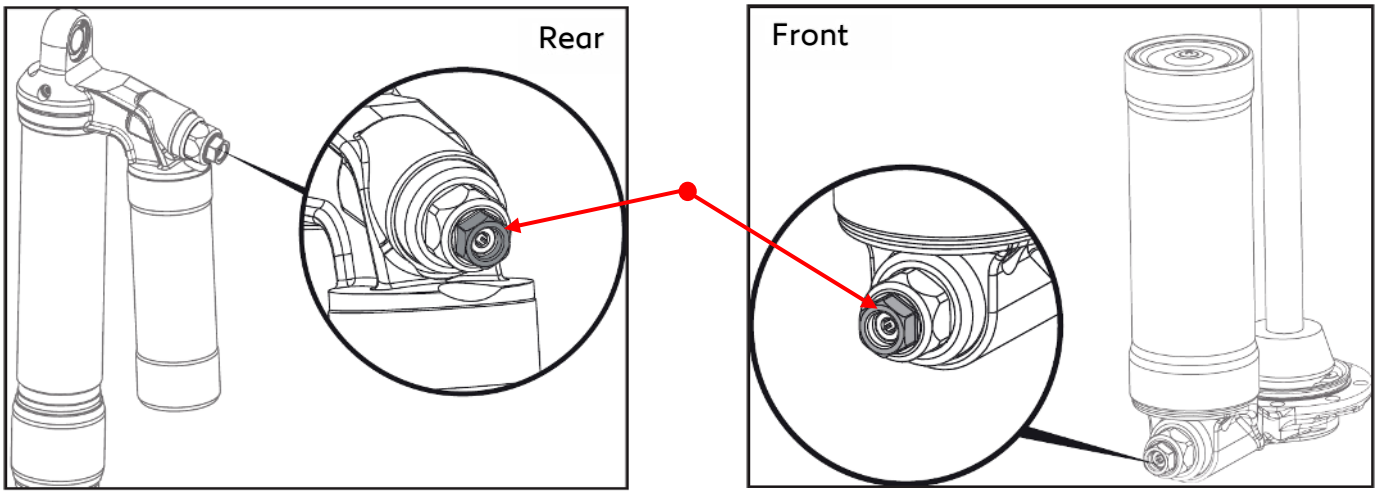
8.4.1. **Compression**

The compression adjustment screws are located on the shock absorber cylinders, at the bottom for the front shock absorbers and at the top for the rear shock absorbers.

Low compression speeds are adjustable via a 3mm Allen key. The total number of clicks is 40; the entire setting range can be used.



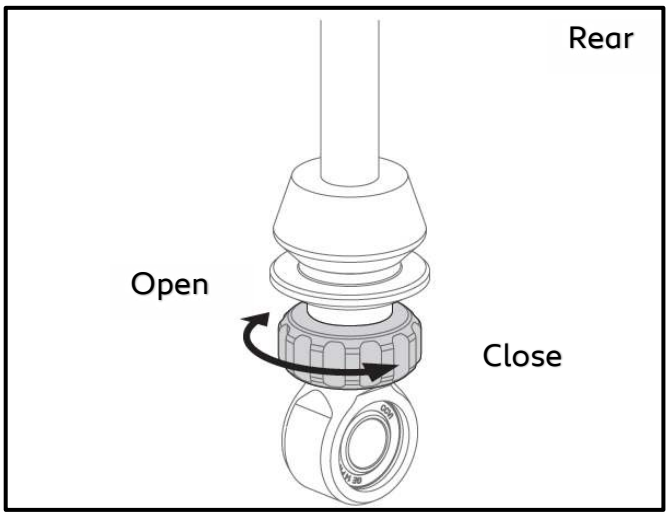
The high-speed compression is adjustable via a 12mm open-end wrench. The total number of clicks is 50; the entire setting range can be used.

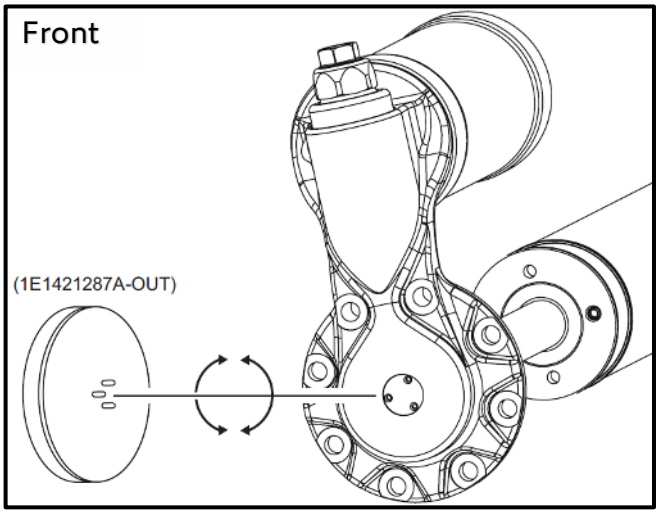


8.4.2. **Rebound**

At the front, the adjustment is made using the tool (1E1421287A-OUT). The total number of clicks is over 60. The adjustment range is between 5 and 50, this to be in accordance with the different springs and type of use (gravel or tarmac).

At the rear, the rebound is adjusted using the notched wheel. Turn clockwise to close. The total number of clicks is 50. The entire setting range can be used.





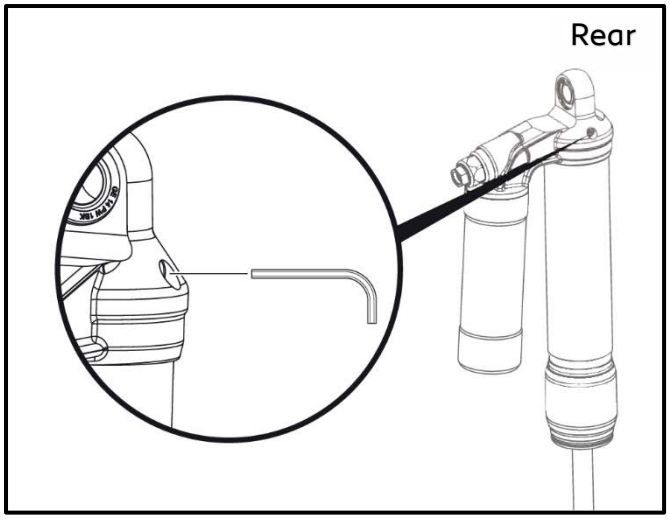
8.4.3. **Hydraulic Bump Stop (PDS)**

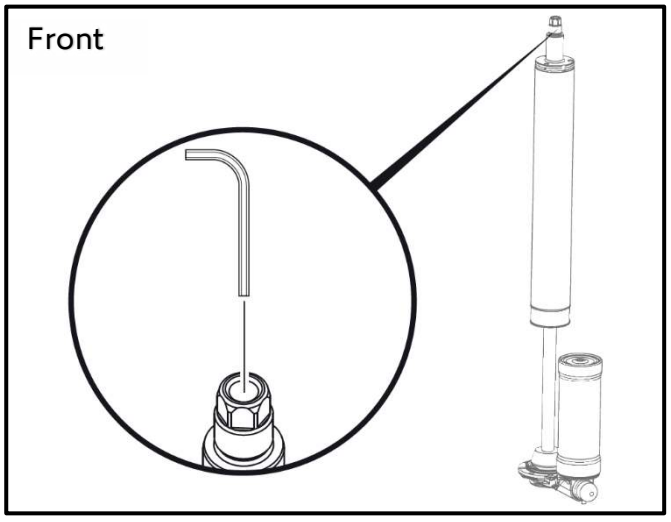
The shock absorbers of the Corsa Rally4 are fitted with a hydraulic bump stop. This one is internal to the shock absorbers and is adjustable.

The hydraulic stop adjusts with a 3mm Allen key. The adjustment range is between 1 and 6 turns. We recommend changing the setting in 0.5 turn increments.

The adjustment screw is located in the centre of the front shock head and on the side of the rear shock head (note that the Torx screw is the drain plug).

IMPORTANT: do not close the hydraulic stop completely; otherwise the shock absorber may be damaged.





8.5. SPRINGS

All the springs of the Corsa Rally4 are black, an identification code as well as the stiffness of the springs are indicated on the top of it. We therefore advise you to protect this information from any external wear.

The front and rear springs are different and three stiffness per axle are available per surface.

The parts in bold are those fitted as standard on the car, the others are available as an option.

8.5.1. Tarmac

FRONT			REAR		
Reference	**Identification**	**Stiffness**	**Reference**	**Identification**	**Stiffness**
1E1420808A	904208088A	45 N/mm	1E2521280A	904212808A	40,5 N/mm
1E1420806A	**904208068A**	**51 N/mm**	**1E2521278A**	**904212788A**	**47 N/mm**
1E1420805A	904208058A	56,5 N/mm	1E2521277A	904212778A	52 N/mm

8.5.2. Gravel

FRONT			REAR		
Reference	**Identification**	**Stiffness**	**Reference**	**Identification**	**Stiffness**
904659378A	904659378A	31 N/mm	904659388A	904659388A	28 N/mm
1E1420810A	904208108A	35,5 N/mm	1E2521282A	904212828A	32 N/mm
1E1420809A	**904208098A**	**40 N/mm**	**1E2521281A**	**904212818A**	**36 N/mm**

8.6. RIDE HEIGHT

The ride height is adjustable via the lower spring cups.

- At the front: 6revs = 10mm. Turn right to increase the ride height.
- At the rear: 5revs = 10mm. Turn left to increase the ride height.

For more information, refer to the setups available on the FTP server.

8.7. ANTI-ROLL BARS (ARB)

Three anti-roll bars of different diameters are homologated for the front and rear axle since 1st January 2021. It is possible to disconnect and remove these bars.

Brown ➔ Gravel kit Gray ➔ Tarmac kit Blue ➔ Gravel and Tarmac kit

8.7.1. Front Anti-roll

FRONT		
Reference	**Stiffness**	**Diameter**
904639358A	Soft	15 mm
904639388A	Medium	18 mm
904639428A	Hard	22 mm

8.7.2. Rear Anti-roll

REAR		
Reference	**Stiffness**	**Diameter**
1E2664119C	Soft	19 mm
1E2664122C	Medium	22 mm
1E2664124C	Hard	24 mm

8.8. GEOMETRY

8.8.1. Front

The front camber is adjustable by changing the thickness of the camber shims mounted between the strut and its interface.

The smaller the thickness, the greater the negative camber, the greater the thickness, the less camber there is.

IMPORTANT: Maximal thickness: **8mm**.

To reach this value it is recommended to make a complete geometry without any camber or toe shims to obtain your initial values. These values can vary from car to car and from side to side.

Front camber: 0.3mm spacer changes the camber by 15'

Front toe: ½-rod rev ➔ 0.75mm rod length ➔ 1,8mm toe at the wheel

Camber / toe repercussion: -30' camber variation at the wheel ➔ + 2mm toe at the wheel.

For more information, refer to the setups in appendix 15.6.

8.8.2. **Rear**

The camber as well as the rear toe are also adjustable via shims installed between the rear hubs and the cross member. These shims having open oblong holes, it is not necessary to remove the hub completely; it suffices to loosen the four nuts to be able to mount / dismount the shims.

The car must always be equipped with three blocks: the 5mm track block, **one** camber shim and **one** toe shim.

To obtain negative camber, the shim must slide over the top of the hub.

To obtain toe in, the shim must slide over the top of the hub and the tab located towards the rear of the car.

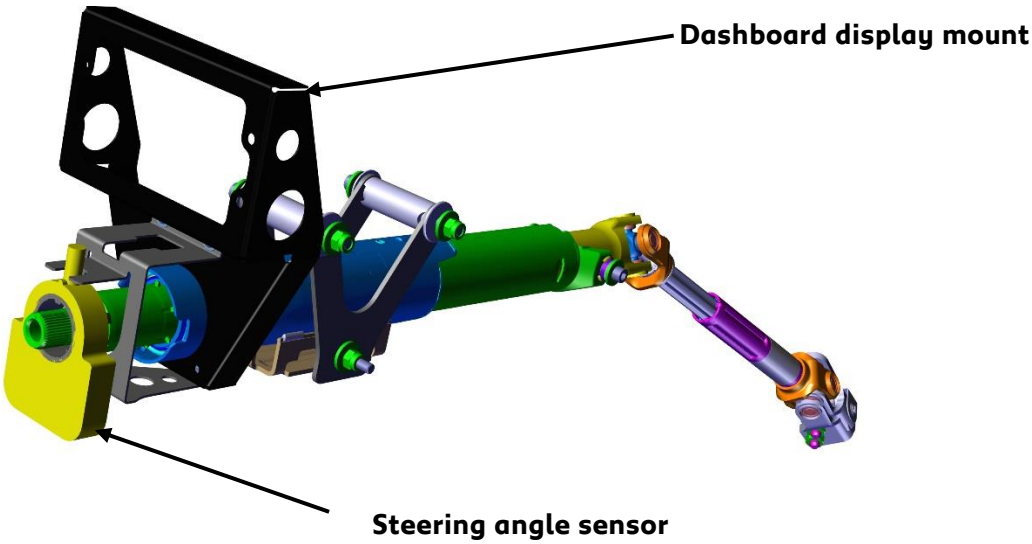
For more information, refer to the setups available on the FTP server.

8.9. STEERING

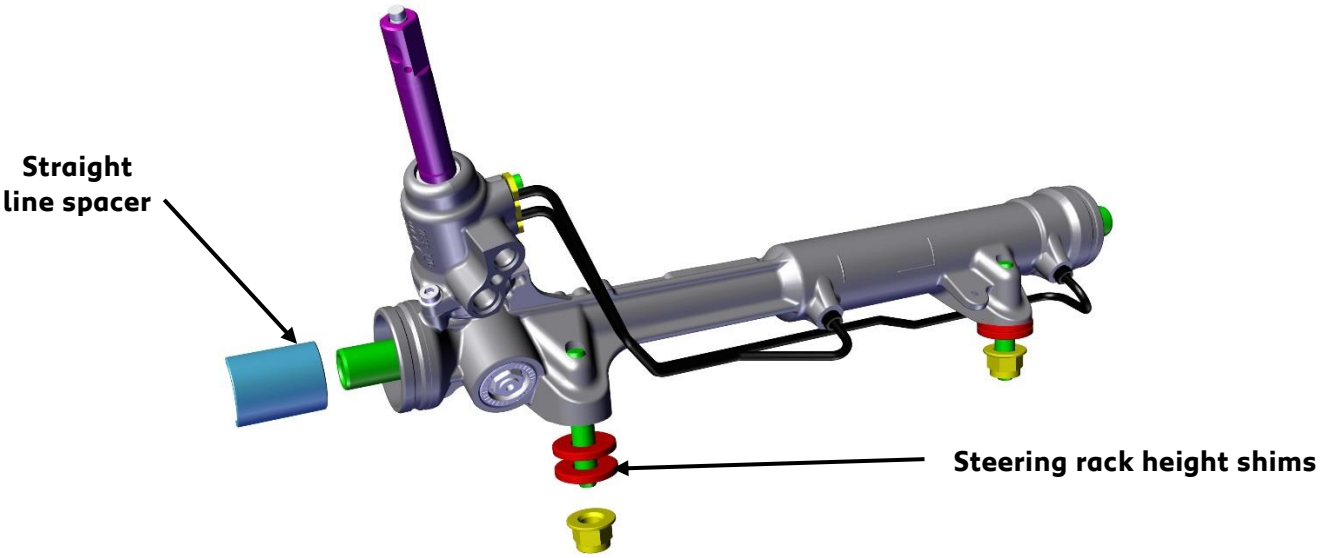
8.9.1. **Presentation**

The steering consists of a rack with hydraulic assistance generated by a pump driven by the accessory belt.

8.9.2. **Steering column**



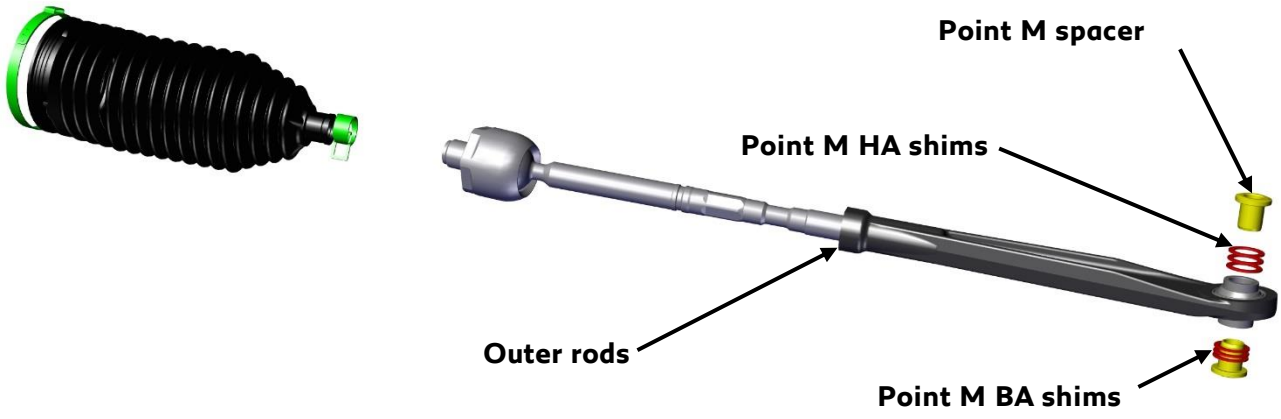
8.9.3. **Steering rack**



The rack height is adjustable using the washer(s) to install between the subframe and the rack:

- **Tarmac**: 2 x 5mm
- **Gravel**: 0mm

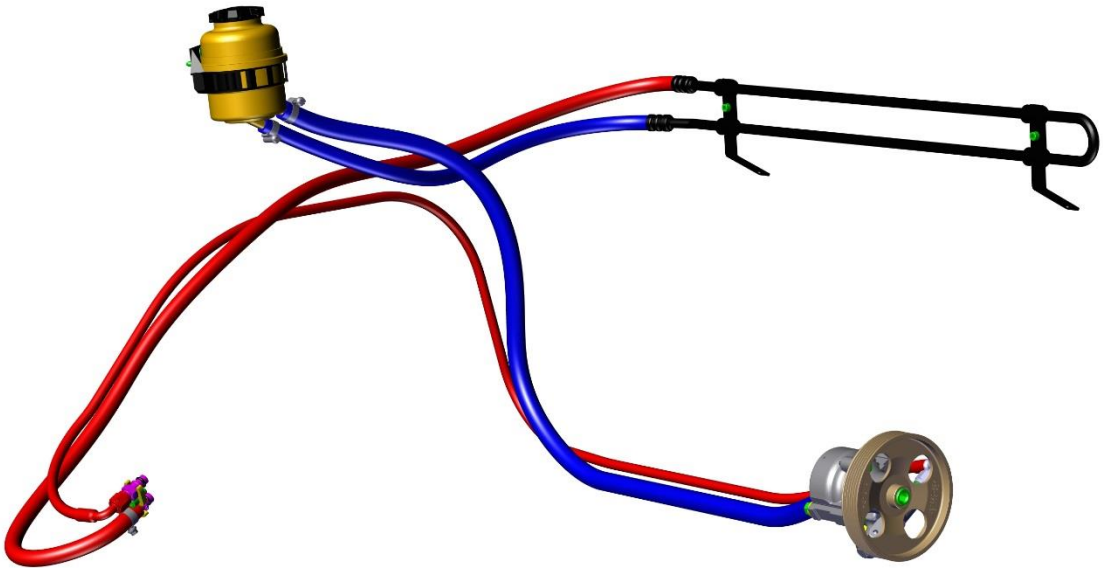
8.9.4. **Steering rods**



Setup:

- **Tarmac**: 5 HA – 1 BA
- **Gravel**: 1 HA – 5 BA

8.9.5. **Hydraulic Circuit**



The same steering pump is used for gravel and tarmac rallies. The diameter of the high pressure coupling influencing the flow rate is specific to the Corsa Rally4: **4.0 mm** for all surfaces.

8.9.6. **Bleeding / Draining of the circuit**

Bleeding the circuit: during the oil pressure priming procedure, check the fluid flow in the tank. Make sure the liquid level is high enough not to introduce air into the circuit.

The circuit is bled with the car on jack stands by turning the wheels from left to right several times when the engine is idling, then do the same with the car on the ground. Check the level regularly during the procedure, top up if necessary.

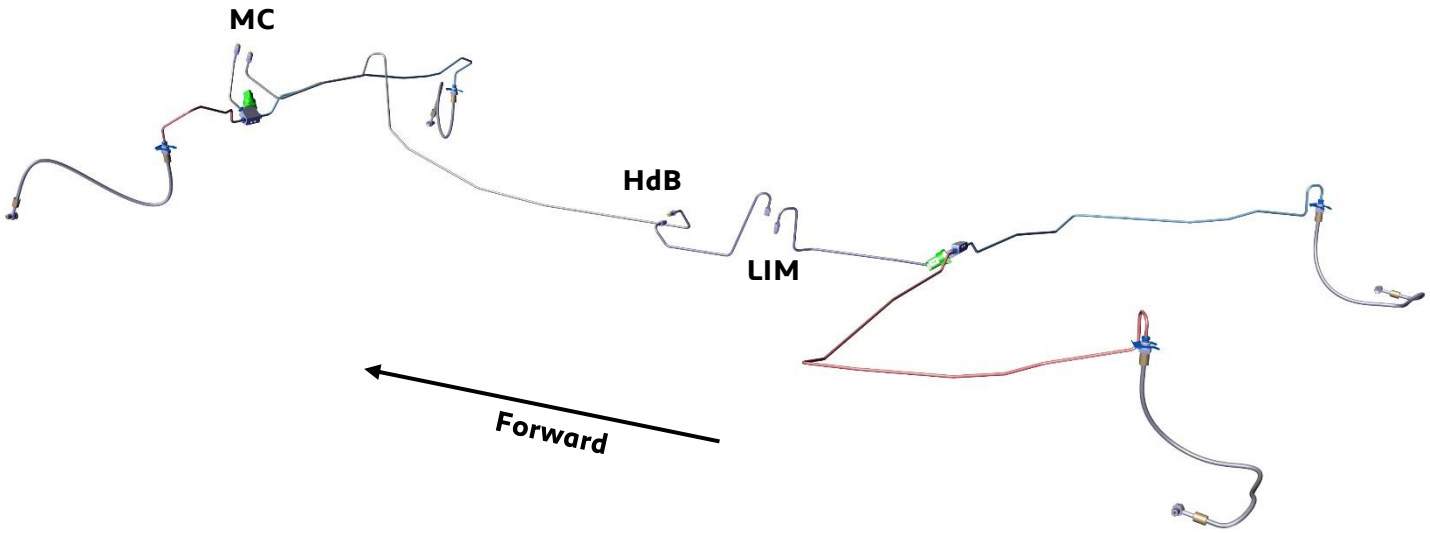
Draining the circuit: to replace the power steering fluid, we advise you to keep the circuit closed and to remove the fluid via the reservoir cap (with a syringe for example) then to add new hydraulic fluid.

9. F00 – BRAKES

The Corsa Rally4 is fitted with TM Performance callipers and pads, while the discs are standard monobloc discs machined and grooved.

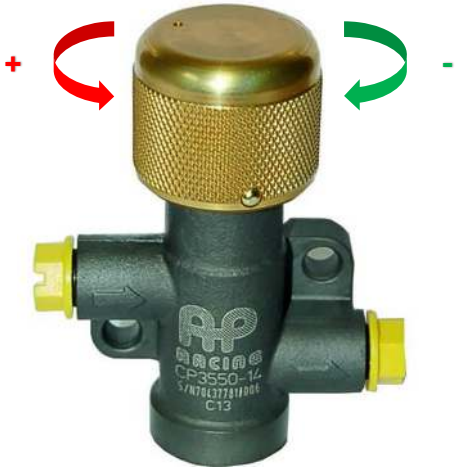
	FRONT	REAR
CALLIPERS	4 Pistons : Ø 36 & 41 mm	2 Pistons : Ø 28,6 mm
DISCS	Ventilated - Tarmac : 330 x 30 Ventilated - Gravel : 283 x 26	Full - 290 x 8
PADS	Tarmac : TM Mix 2 Gravel : TM Mix 1	TM Performance
BRAKE FLUID	Brembo HTC 64 T	

9.1. PRESENTATION

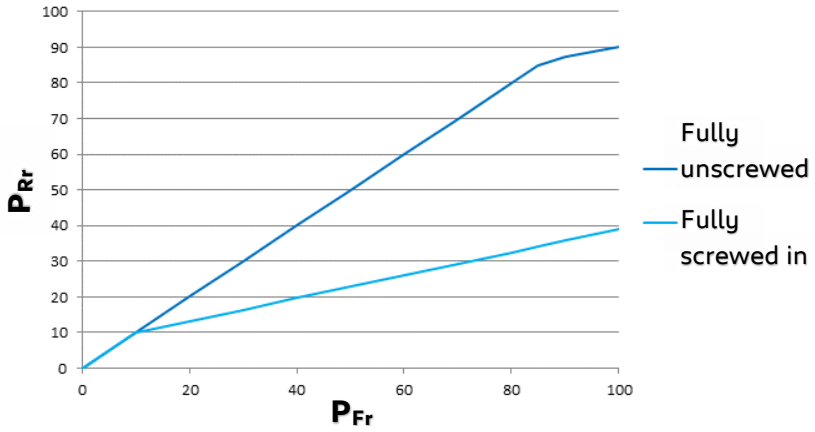


The Corsa Rally4 is equipped with a single master cylinder and a proportional-type rear brake pressure limiter, allowing the maximum pressure on the rear axle to be adjusted according to the level of the front pressure.

It is necessary to release the brakes before making any adjustments.



- To increase the rear pressure, unscrew the thumbwheel. Fully **unscrewed** ➔ no limitation: $P_{Rr} = P_{Fr}$.
- To decrease the rear pressure, screw the thumbwheel. Fully **screwed in** ➔ high limitation: $P_{Rr} < P_{Fr}$.



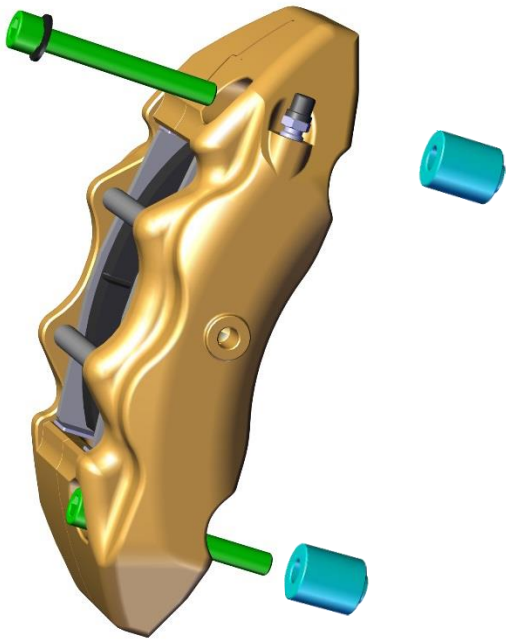
We recommend a basic setting with a rear limitation set to **16 bar** for **30 bar** at the front. Which corresponds approximately to completely unscrewing the thumbwheel and screwing ¼ of a turn

To check the brake pressures, simply go to the "mechanic - brake" page on the dashboard then brake hard until you get 30 bar at the front.

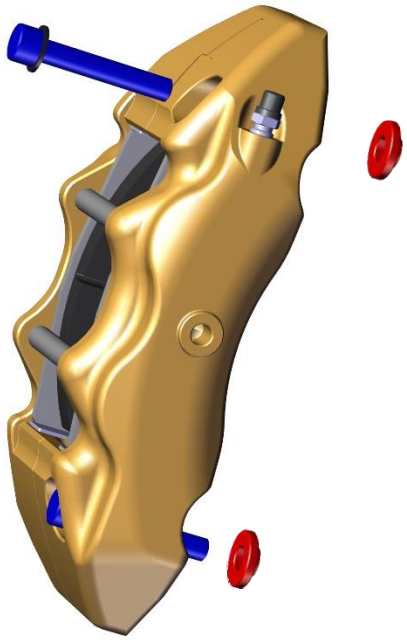
9.2. TARMAC / GRAVEL ASSEMBLY

The callipers are identical, but the spacers (and screws) are specific are specific to the surface.

Tarmac Front Callipers Assembly



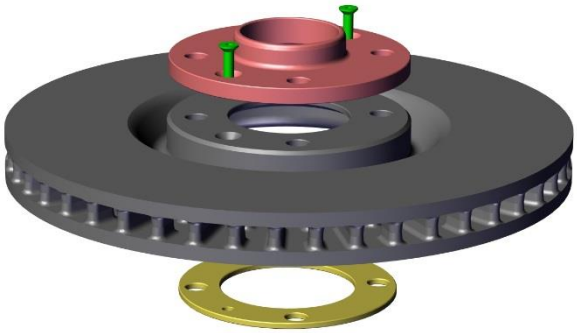
Gravel Front Callipers Assembly



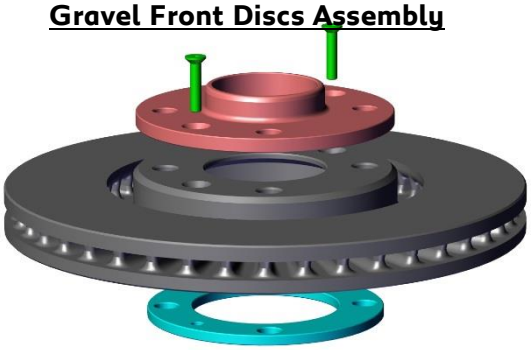
The tarmac discs are 330x30mm while the gravel ones are 283x26mm.

The gravel spacers between the disc and the upright and between the disc and the wheel are different from the tarmac one.

Tarmac Front Discs Assembly



Gravel Front Discs Assembly

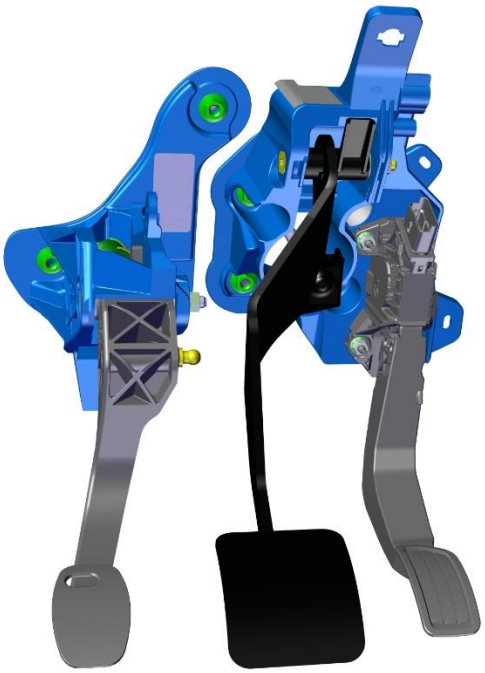


10. G00 – COMMANDS

10.1. PEDAL BOX

The Corsa Rally4 is equipped with a standard pedal box with an electric throttle pedal and a reinforced brake pedal.

The pedal and the clutch cylinder are standard; the bleeder is on the gearbox. The brake-bleeding tool can also be used to bleed the clutch.

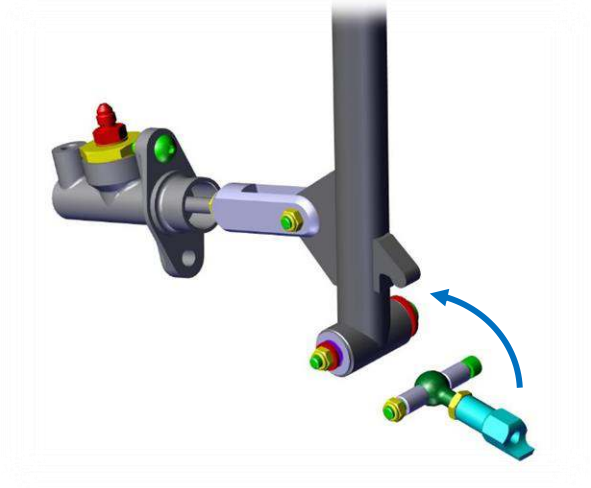


10.2. HANDBRAKE

The hydraulic hand brake is fitted with a locking system.

To lock it, pull the handbrake lever and tilt the tab back to lock the lever.

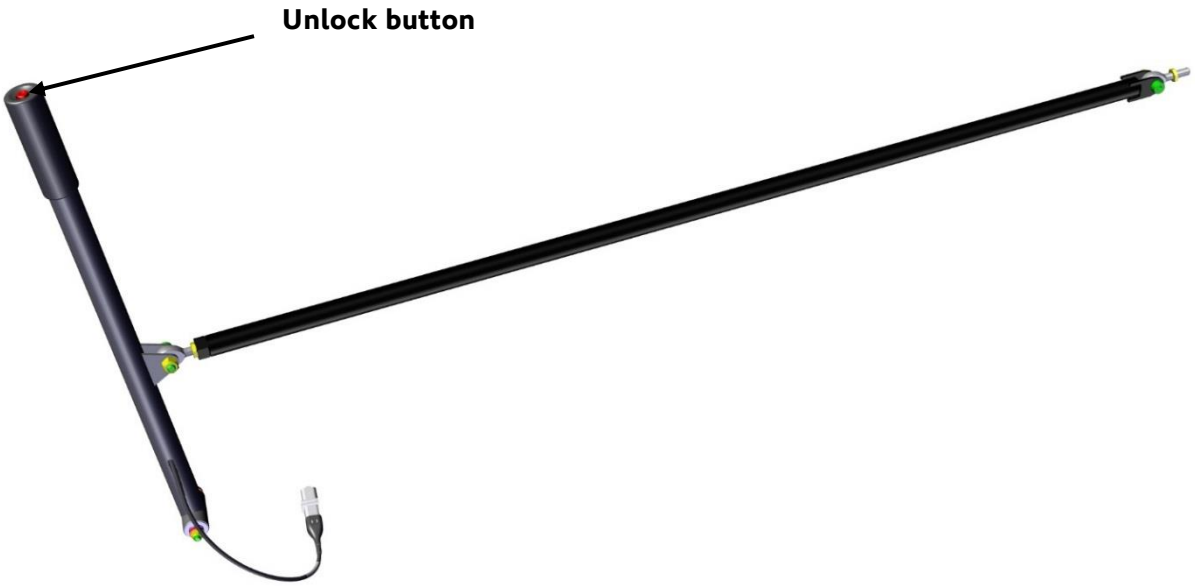
To unlock it, simply pull the lever, the tab will return to the initial position by itself.



10.3. GEARBOX COMMAND

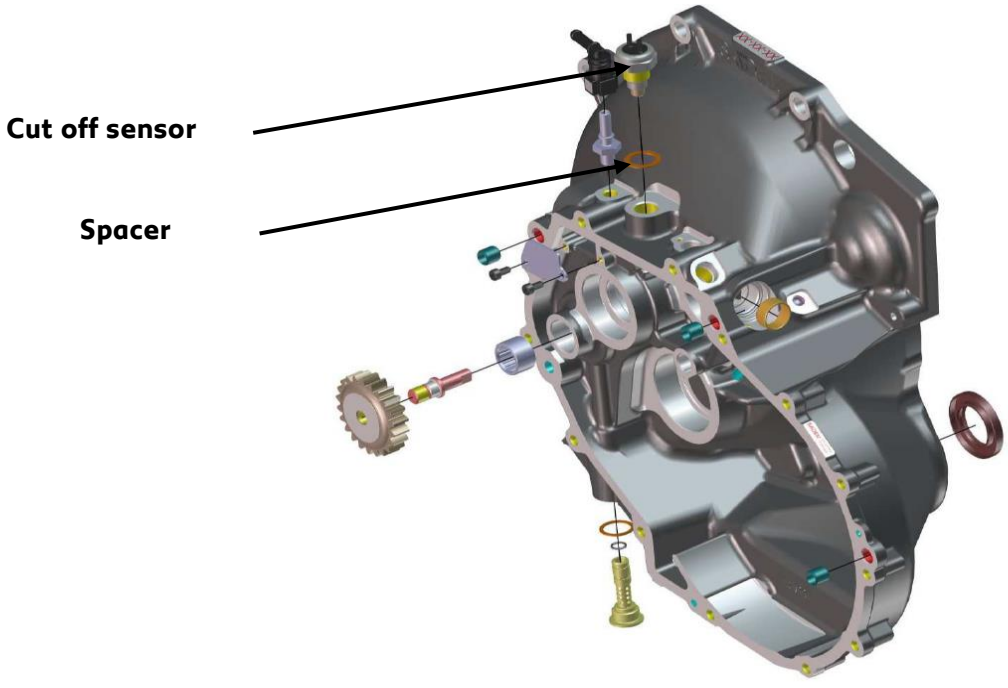
Pull the lever to shift up and push to shift down.

It is necessary to activate reverse lock via the button on top of the gear lever to shift down into neutral as well as to shift into reverse. Not necessary for upshift.



A cut-off sensor is present on the gearbox (see Sadev manual), it is triggered by the movement of the barrel control pin in the gearbox. Its trigger is adjustable via several washers of different thicknesses under the sensor.

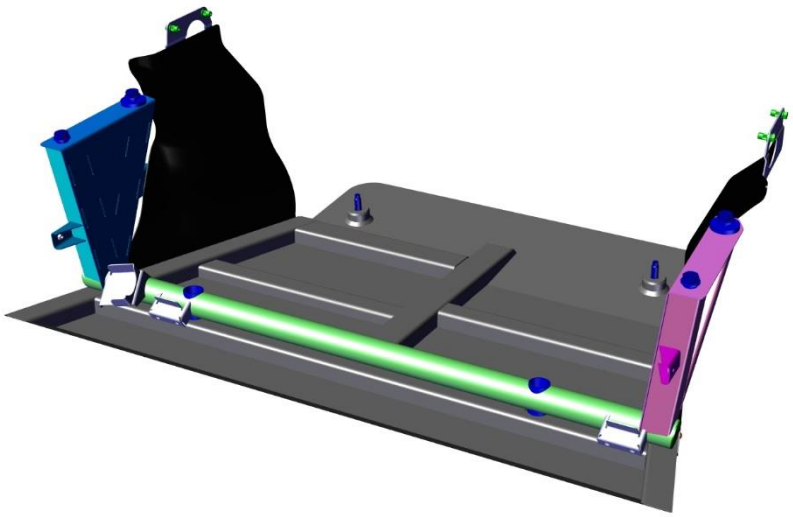
Increasing the thickness of the washer delays cutting, reducing the thickness of the washer advances cutting.



11. R00 – PROTECTIONS

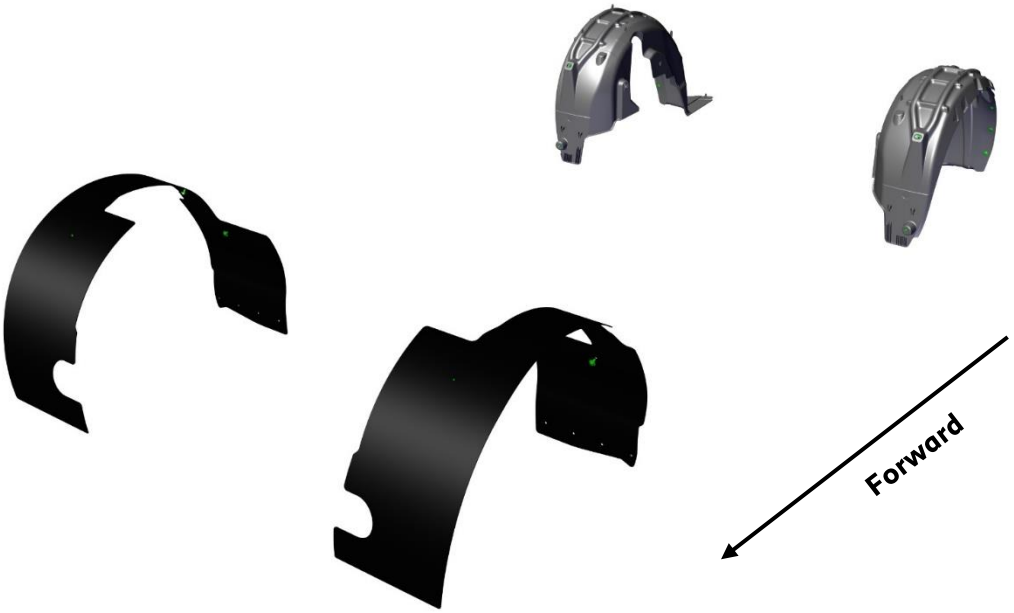
11.1. SUMPGUARD

The car is fitted with a large sumpguard, going from the rear of the subframe to the front bumper to ensure optimal protection.



11.2. WHEELARCHES

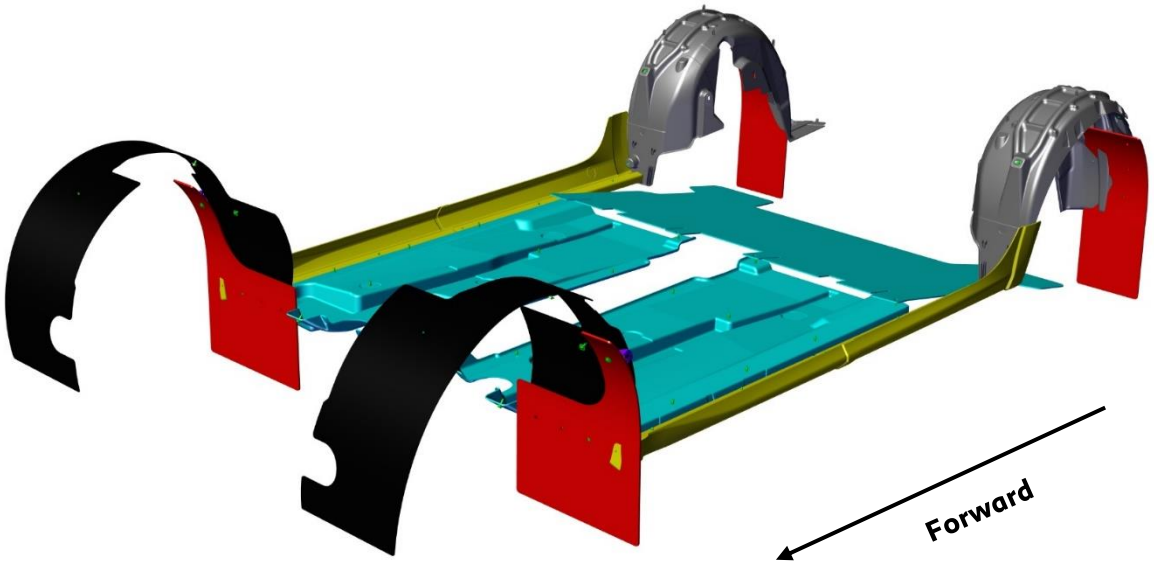
Four wheel arches are fitted on the car regardless of the surface to limit projections.



11.3. GRAVEL PROTECTION

The ground protections are made of underbody protection (blue), sill protection (yellow) and front mud flaps (red).

Rear mud flaps (red) are available as an option for FIA rallies.



12. T00 – INTERNAL EQUIPMENT

12.1. FUEL CIRCUIT

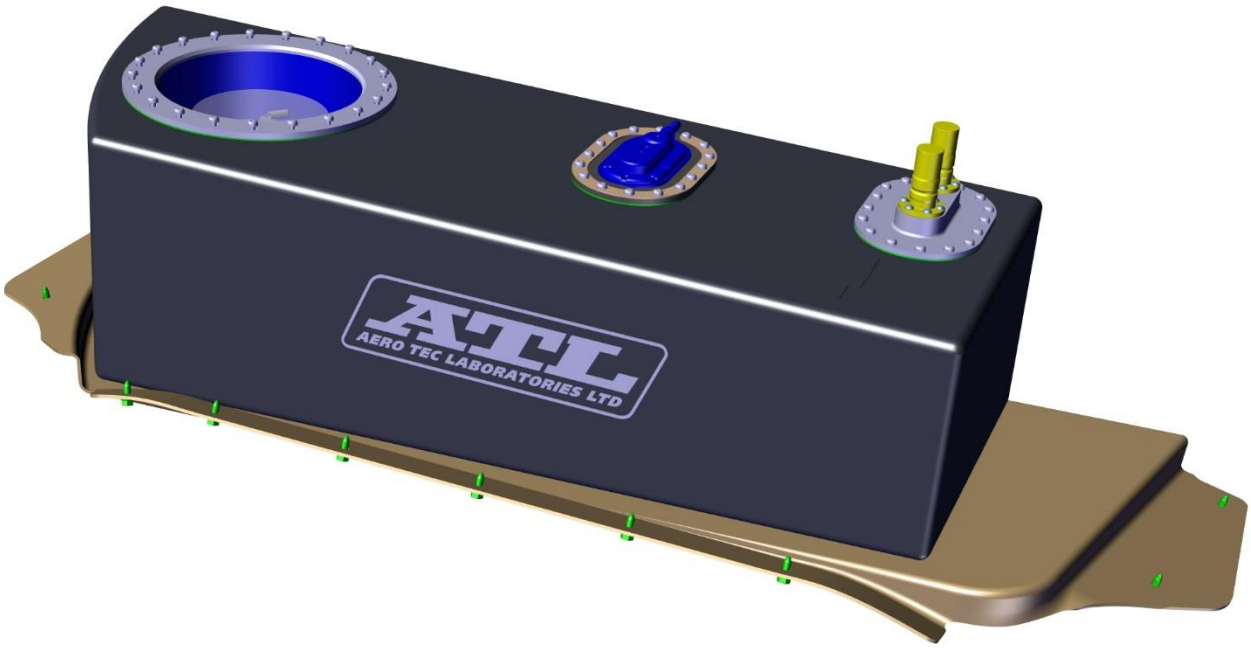
12.1.1. Fuel Tank

The fuel tank fitted to the Corsa Rally4 is compliant to the standard **FT3-1999**.

The drawable volume is **63L (+/- 2,5L)**

As the volume may vary over time, we invite you to measure the capacity of your fuel tank every 6 months by following the procedure in appendix 15.7.

If the capacity is greater than 65.5L, it is imperative to reduce the fuel volume with "tank volume balls".



Reminder of the fuel consumption:

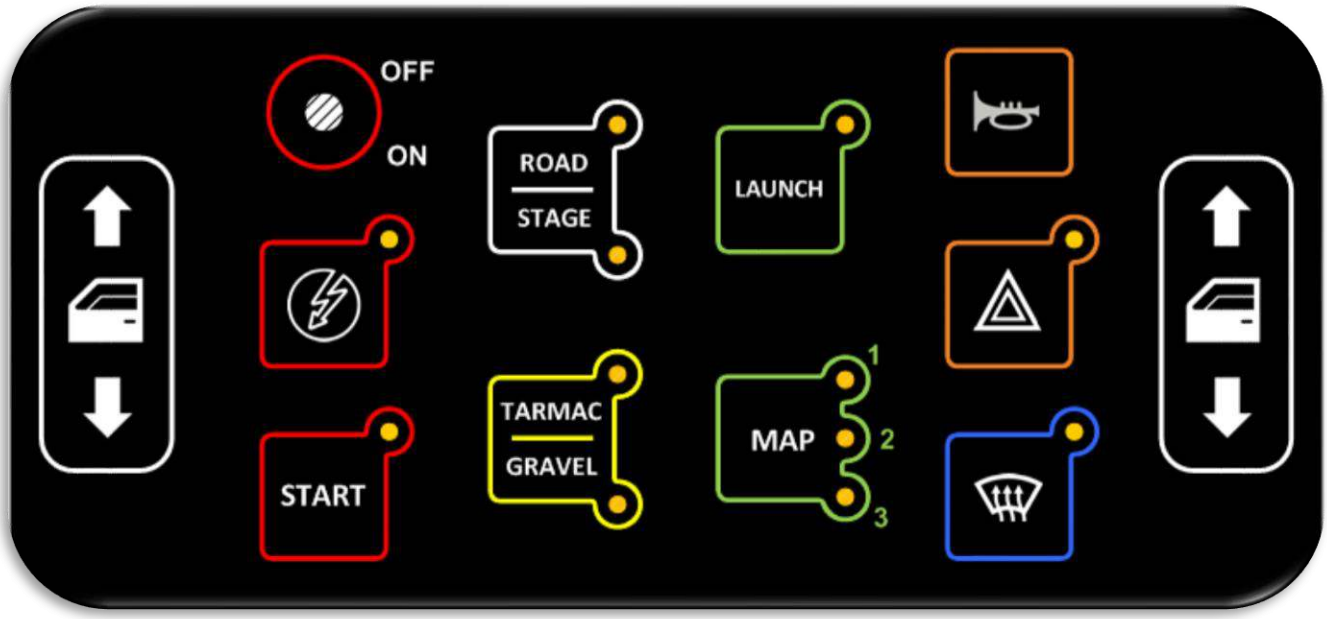
Road : 13l/100km **Stage – Tarmac : 56L/100km** **Stage – Gravel : 60L/100km**

12.1.2. Fuel pumps

The tank is fitted with a pump gauge module. A standard high-pressure fuel pump is present on the engine.

13. ELECTRONICS

13.1. CONSOLE



13.1.1. **Main switch:**

Power supply to ECU, Power Box, Dashboard, Console

13.1.2. **Power Switch:**

After contact power supply, supply to the actuators, turn on ignition, Yellow LED = ON.

13.1.3. **Engine Start:** 

Oil pressure priming procedure (first start):

- MAIN ON
- Power OFF
- Gearbox in Neutral (it is not necessary to press the clutch pedal)

- Press the horn button  then press START 

  ⇨ The starter motor turns as long as the START button is pressed.

  ⇨ Continue the procedure until the oil pressure has reached 2bars (monitor on the dashboard display).

Engine starting procedure:

- MAIN ON
- Power ON
- Gearbox in Neutral (it is not necessary to press the clutch pedal)
- Short press on the START button

  ⇨ The starter will turn for 5 seconds maximum.

13.1.4. **Launch strategy** 

Active when the yellow LED is ON

Starting procedure:

- On the start line, stopped, engine running
- "STAGE" mode ON
- 1st gear engaged
- Handbrake pressure > 7 bars
- Press the "LAUNCH" button, yellow LED turns ON
- Throttle pedal at 100%

13.1.5. Engine strategy:

ROAD: Limited torque, no ALS, no boost – Active when yellow LED is ON

STAGE: Full performance – Active when yellow LED is ON

TARMAC / GRAVEL: selection active when yellow LED is ON

Selection of the tire circumference for vehicle speed

Torque limitation on the "LAUNCH" strategy

Engine map – selection active when yellow LED is ON

Description of the different engine mappings:

CORSA RALLY 4	ROAD	STAGE					
		TARMAC			GRAVEL		
		MAP 1 : High grip	MAP 2 : Low grip	MAP 3 : Ice / Snow	MAP 1 : High grip	MAP 2 : Medium grip	MAP 3 : Low grip
Pedal curve	Linear	Linear			Linear		Low
ALS	Off	High	Medium	Medium	High	Medium	Low
Launch control	Off	Maximum	Medium	Torque limitation	Medium	Torque limitation 1	Torque limitation 2
Torque limitation	Off	Limitation : 1st	Limitation : 1st 2nd 3rd	Limitation : 1st 2nd 3rd 4th	Limitation : 1st 2nd 3rd	Limitation : 1st 2nd 3rd 4th	
Upshift	Low	High	High	High	High	High	Low

13.1.6. **Accessories command:**

Window lift command Driver / Codriver - Active POWER ON

Window lift calibration: Activate the window until its upper position and maintain for a few seconds.

Klaxon - Active POWER ON and OFF

Warning – Active when yellow LED is ON

Light Forcing function: POWER OFF – Long press on the button

Demister: Heated windscreen +cockpit heater - Active POWER ON – yellow LED ON

Fans Forcing function: POWER OFF – Long press on the button

13.1.7. **Soft 14.2.2.23 - TMS:**

From software 14.2.2.21, it is possible to add a button on the steering wheel in order to have a more developed torque management.

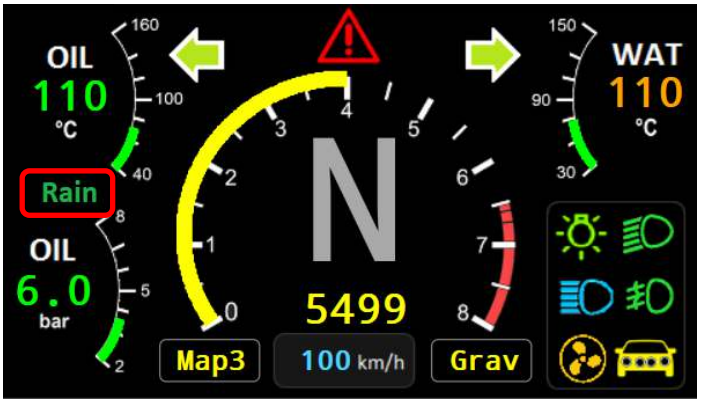
The pilot has the choice between four modes: Off, Gravel, Rain and Tarmac.

At each start, the car will return to Off mode automatically.

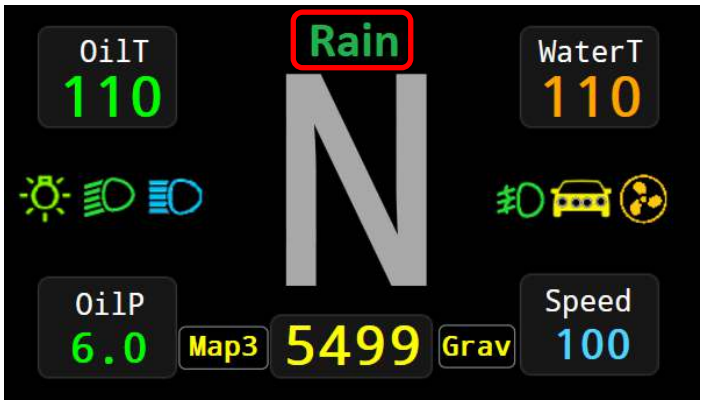
Simply press the additional button to change modes.

Dash display:

On the last dash version, the selected mode is displayed on the Road and Stage pages.



Road

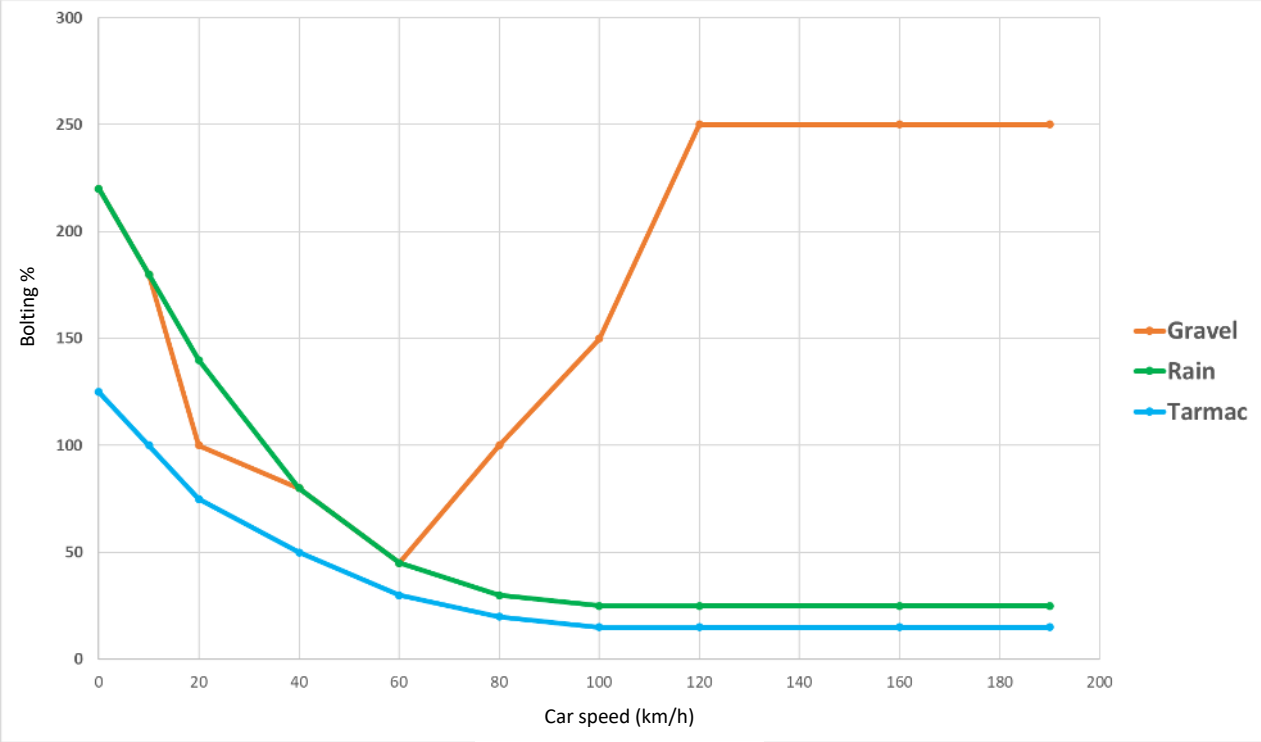


Stage

Operation:

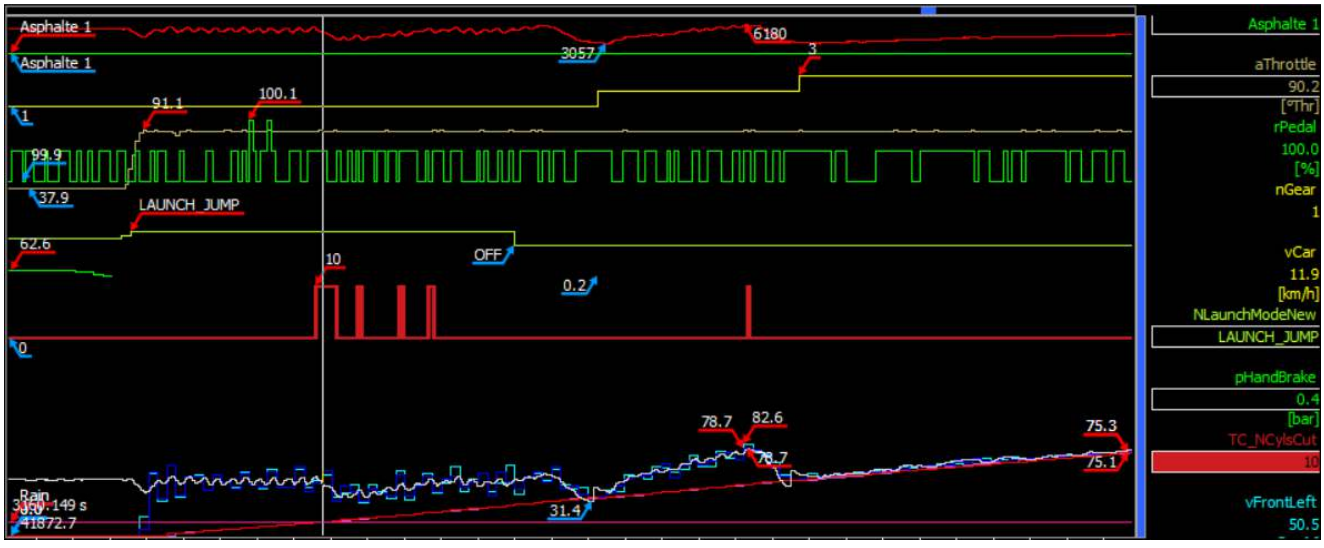
Below is a table summarizing the activation of the limitation according to the percentage of front wheel bolting.

Dash	Mode	*0*	*10*	*20*	*40*	*60*	*80*	*100*	*120*	*160*	*190*	Car speed (km/h)
	1	*Deactivated*										Front wheel bolting (%)
Gravel	2	220	180	100	80	45	100	150	250	250	250	
Rain	3	220	180	140	80	45	30	25	25	25	25	
Tarmac	4	125	100	75	50	30	20	15	15	15	15	



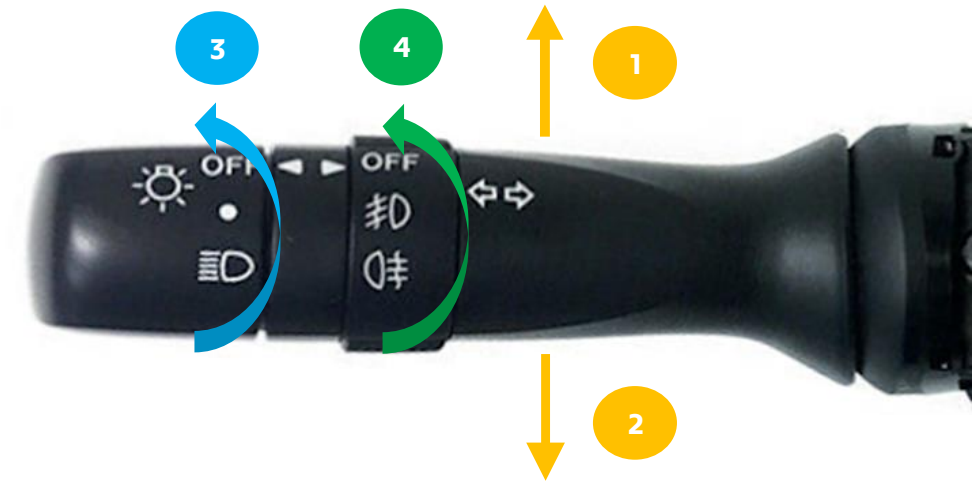
Wintax:

The User 2022_10 have a dedicated page called "Traction" which allows you to see the management action, it is active when the "Ncylcut" channel goes to state "10".



13.2. LIGHTS / WIPERS CONTROL ARMS

Left control arm:



1 - Right indicator

2 - Left indicator

3 - Headlights activation POWER ON

1st notch: Parking lights (Rear); 2nd notch: low beam

4 - Corner lights and lamp pod activation (only when low/high beam activated)

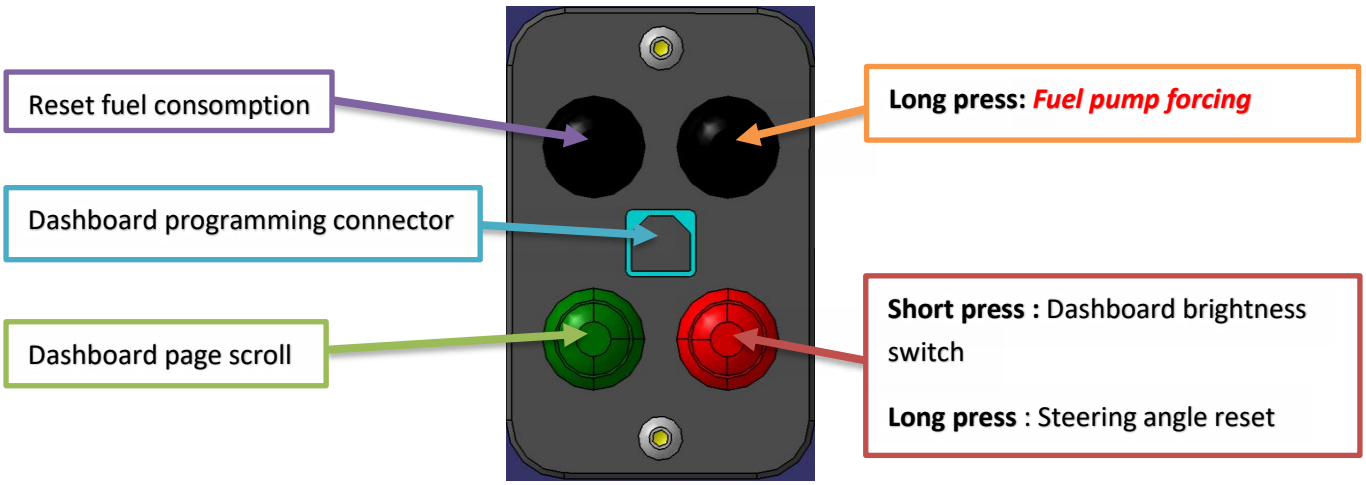
1st notch: Corner lights; 2nd notch: Lamp pod

Right control arm:

1 - 1st notch: Intermittent wipers; 2nd notch: Low speed wipers; 3rd notch: High speed wipers

2 - Control arm pull: windscreen washer + High speed wipers

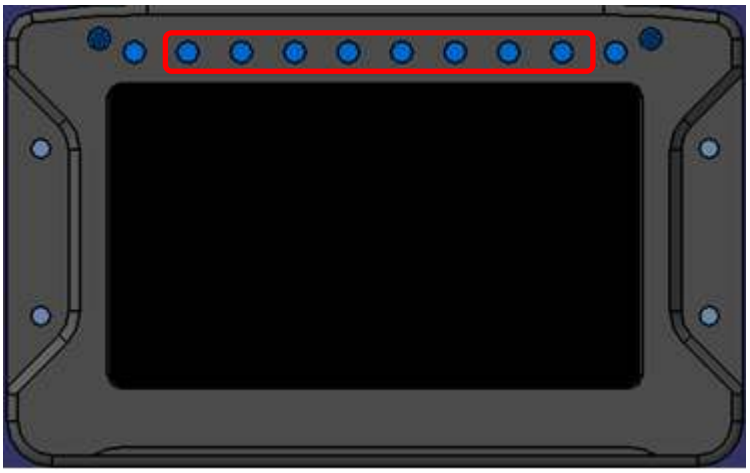
13.3. ADDITIONAL KEYBOARD



13.4. DASHBOARD DISPLAY

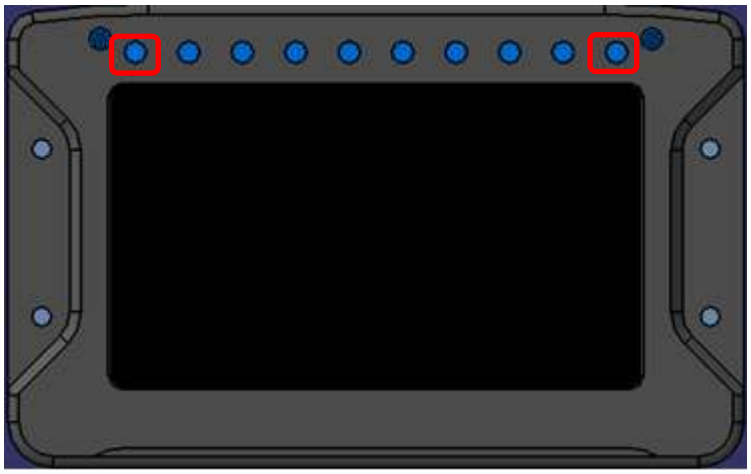
13.4.1. LEDS

Engine revs LEDS



Gear engaged	Engine revs	LED lighting
1&2	5200 => 6000	Gradually in Yellow
	6100 => 6150	Fixed Reds
	> 6150	**Flashing Reds**
3	5300 => 6000	Gradually in Yellow
	6100 => 6150	Fixed Reds
	> 6150	**Flashing Reds**
4	5500 => 6000	Gradually in Yellow
	6100 => 6150	Fixed Reds
	> 6150	**Flashing Reds**
5	6200 => 6600	Gradually in Yellow
	6600 => 6750	Fixed Reds
	> 6750	**Flashing Reds**

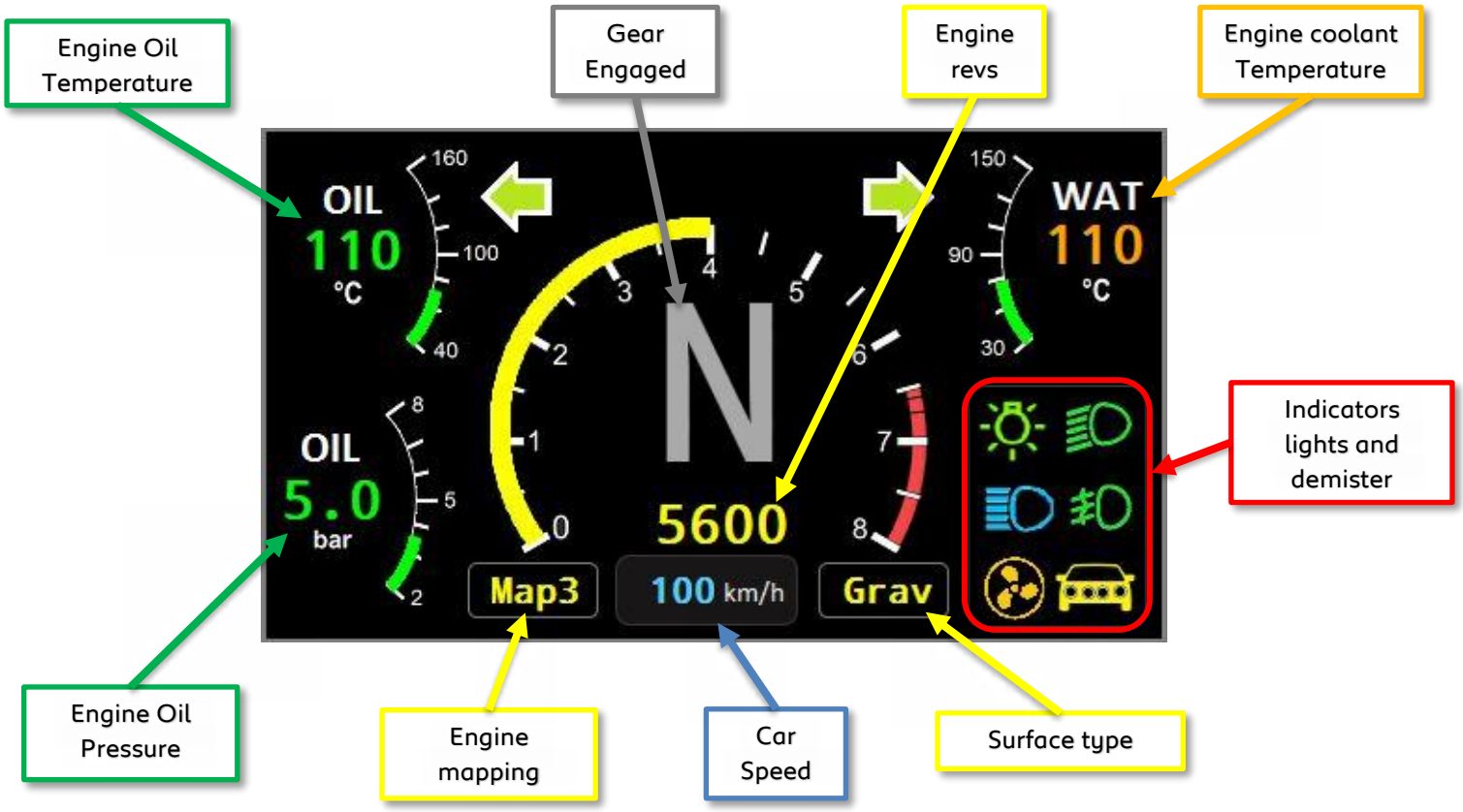
Alarm LEDs



Parameters	Conditions	Messages	LEDs
Engine Oil Pressure	Too low < 2.5 Bar Table PHuiMot = f(Nmot) Nmot > 900 rpm for 0.5s	ENGINE OIL PRESS	Flashing Blues
Engine Water Temperature	Engine water temp >115 °C RPM >= 500 rpm for 1 s	T WATER + Value	Flashing Blues
Battery Voltage	Vbatt < 11V for 2s	Vbatt + Value	Flashing Blues
Exhaust Temperature Out of Order	T3 > 1240°C Engine rev >= 500 rpm for 0,5 s	! Texhaust HS !	Flashing Blues
Rail Pressure	Engine rev > 1000 rpm PRailTgt - Prail > 30 bar for 2 s	! Pfuel	Flashing Blues
Turbo Temperature	T3 > 600°C Régime mot < 2000 rpm Vcar < 5 km/h Gear=0 for 0,5 s	! Turbo Temp !	Flashing Blues
Injector driving voltage	Vtank < 63 V Power ON Engine rev >200 for 1s	! Vtank HS !	Flashing Blues
Low turbo pressure	(P2 + P2P) > 0,8 bar Engine rev > 3500 rpm Throttle > 80% Mode Stage, for 0,7s	! Boost Pressure !	Flashing Blues
Shifter Out of Order	0,2 V < vShifter < 4,8V Engine rev > 500 rpm for 1 s	! SHIFTER HS !	Flashing Blues
Engine RPM sensor Out of Order	Engine rev > 500 rpm for 1 s	! NO CRANK !	Flashing Blues
Intake camshaft sensor Out of Order	Engine rev > 500 rpm for 1 s	! NO INT CAM !	Flashing Blues
Exhaust camshaft sensor Out of Order	Engine rev > 500 rpm for 1 s	! NO EXH CAM !	Flashing Blues
Engine rev signal lost	Engine rev > 500 rpm for 1 s	! CRANK LOST !	Flashing Blues
Intake camshaft signal lost	Engine rev > 500 rpm for 1 s	! INT CAM LOST !	Flashing Blues
Exhaust camshaft signal lost	Engine rev > 500 rpm for 1 s	! EXH CAM LOST !	Flashing Blues
Engine rev sync issue	Engine rev > 500 rpm for 1 s	! CRANK NOT PHASED !	Flashing Blues
Intake camshaft sync issue	Engine rev > 500 rpm for 1 s	! INT CAM NOT PHASED !	Flashing Blues
Exhaust camshaft sync issue	Engine rev > 500 rpm for 1 s	! EXH CAM NOT PHASED !	Flashing Blues

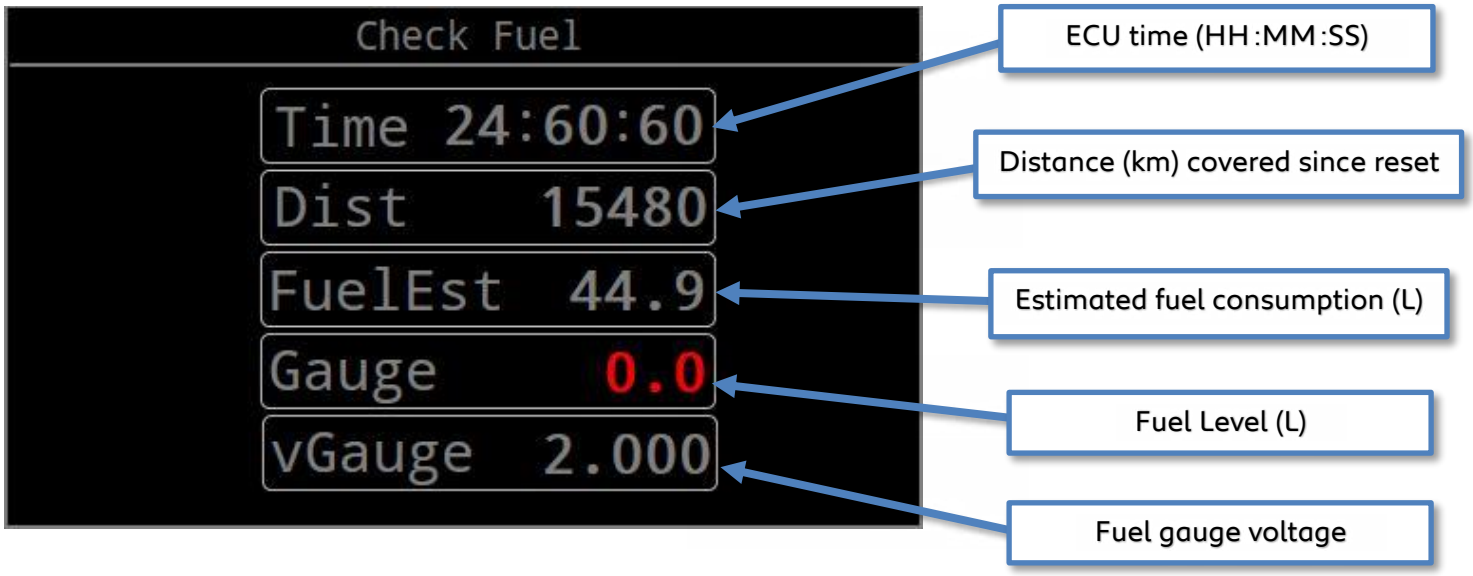
13.4.2. **Pages**

Page 1: Road



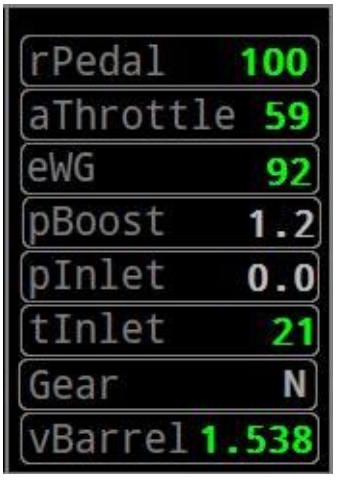
Page 2: Stage

Page 3: Check Fuel (Fuel consomption)



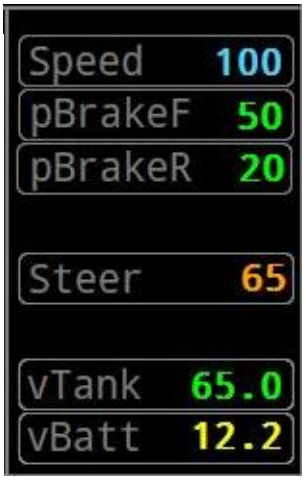
Page 4: Check page

: Engine Speed (rpm)
: Oil Pressure (°C)
: Oil Temperature (°C)
: Water Temperature (°C)
: Fuel Pressure (out of HP Feul Pump) (bar)
: HP Fuel Pressure Target (bar)
: Exhaust Temperature (°C)
: Richness value

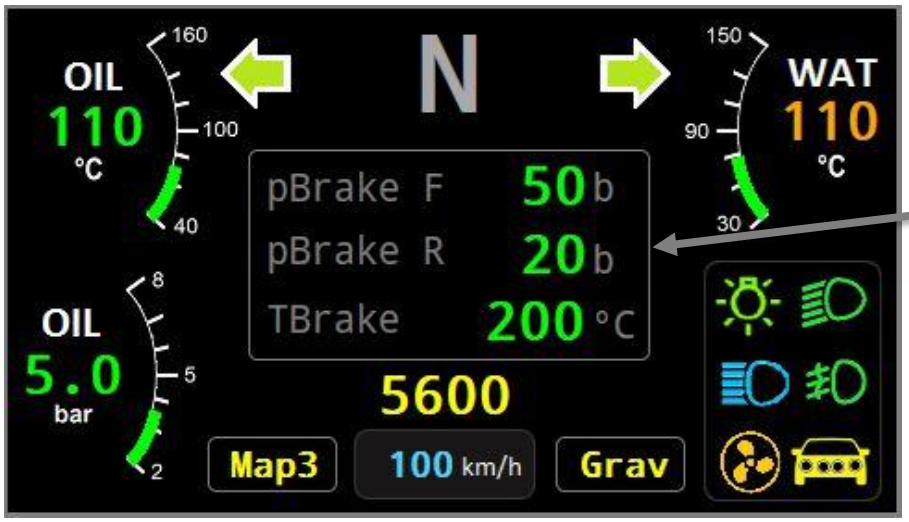


: Throttle Pedal Position (%)
: Throttle opening (°)
: Waste gate position (%)
: Turbo outlet air pressure (bar)
: Intake manifold air pressure (bar)
: Intake manifold air temperature (°C)
: Gear engaged
: Barrel Sensor Voltage

Car Speed (km/h):
Front Brake Pressure (bar):
Rear Brake Pressure (bar):
Steering Angle (°):
Vtank Voltage (V):
Battery Voltage (V):

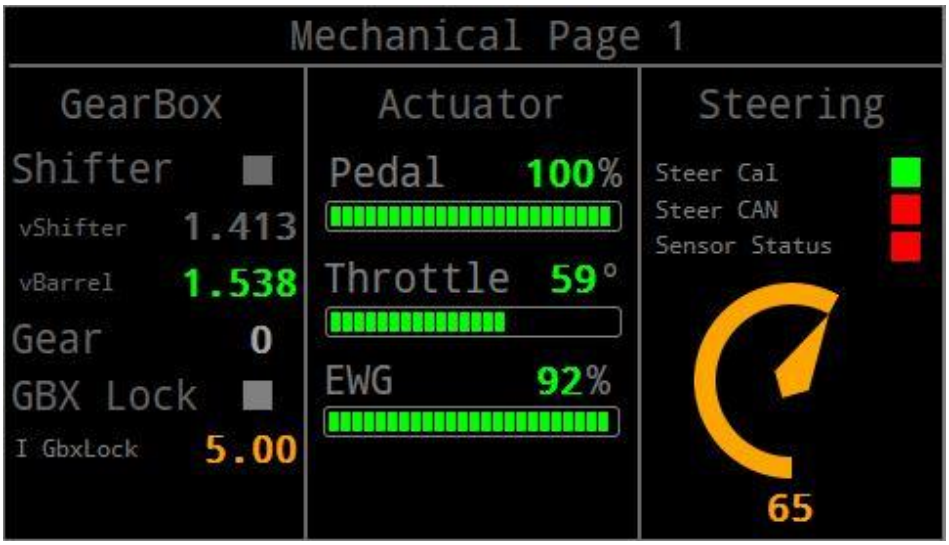


Page 5: Brake bedding



Front Brake Pressure (bar)
Rear Brake Pressure (bar)
Front Brake Temperature (°C - option)

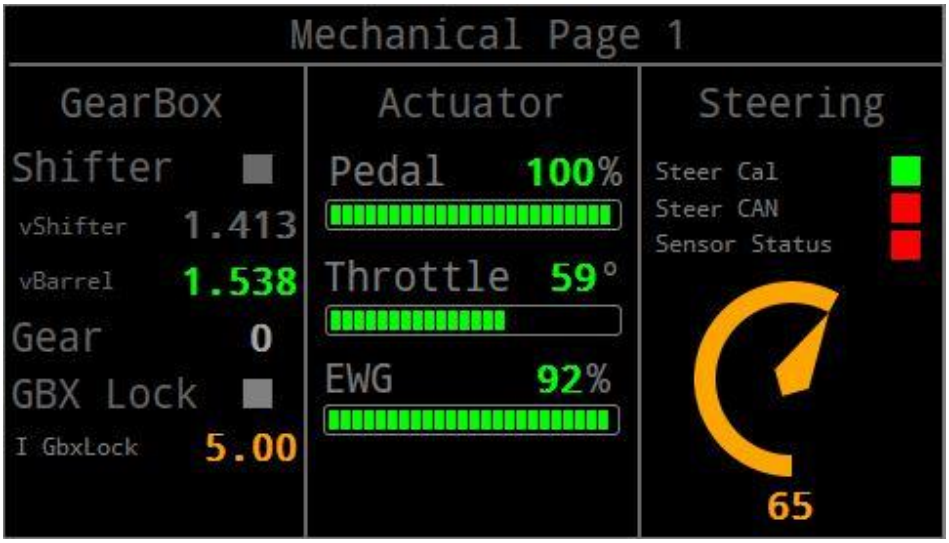
Page 6: Mechanical Page 1



Gearbox

Active shifter sensor (green):
Shifter sensor voltage:
Barrel sensor voltage:
Gear engaged:
Active Reverse Lock (green):
Reverse Lock current (2A quand actif):

Gear	R	N	1	2	3	4	5
Barrel Voltage (V)	0,59	1,23	1,87	2,50	3,14	3,78	4,20



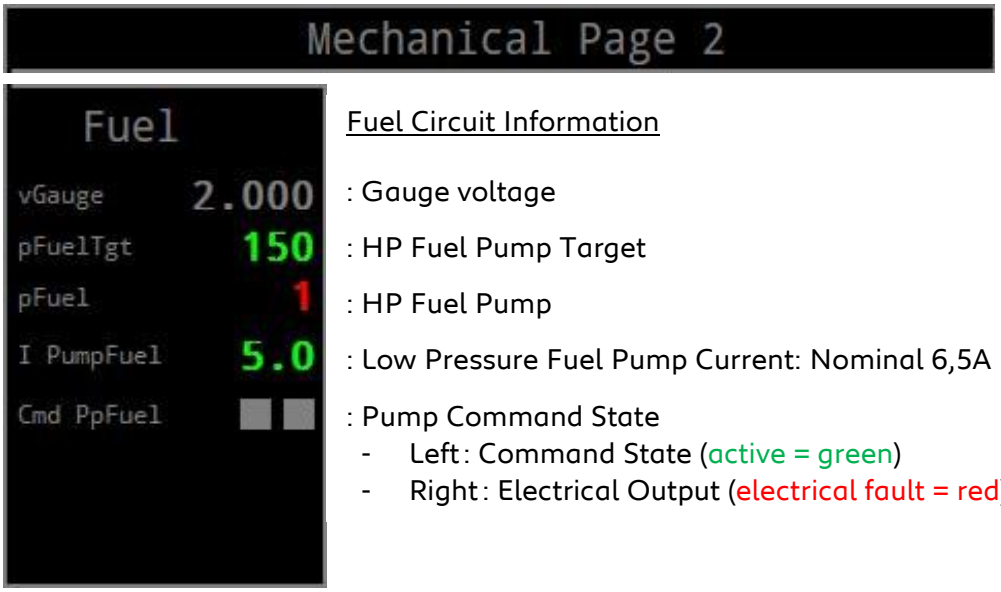
Steering angle information

Steering angle calibration – Green = OK
CAN Communication - Green = OK
Sensor status - Green = OK

Steering wheel position (°)

Zero = steering wheel straight

Page 7: Mechanical Page 2



Fuel Circuit Information

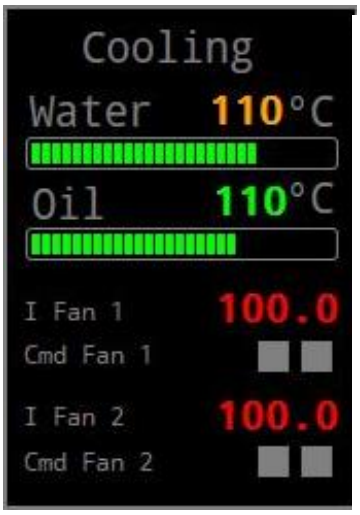
: Gauge voltage

: HP Fuel Pump Target

: HP Fuel Pump

: Low Pressure Fuel Pump Current: Nominal 6,5A

: Pump Command State
- Left : Command State (active = green)
- Right : Electrical Output (electrical fault = red)



Cooling Information:

: Water Temperature

: Engine Oil Temperature

: Radiator Fan Current

: Radiator Fan Command
- Left: Command State (active = green)
- Right: Electrical Output (electrical fault = red)

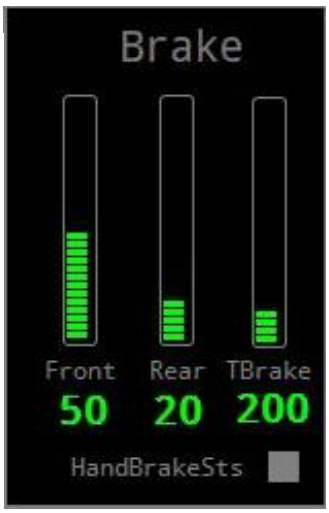
Brakes Information:

Front Brake Pressure (bar):

Rear Brake Pressure (bar):

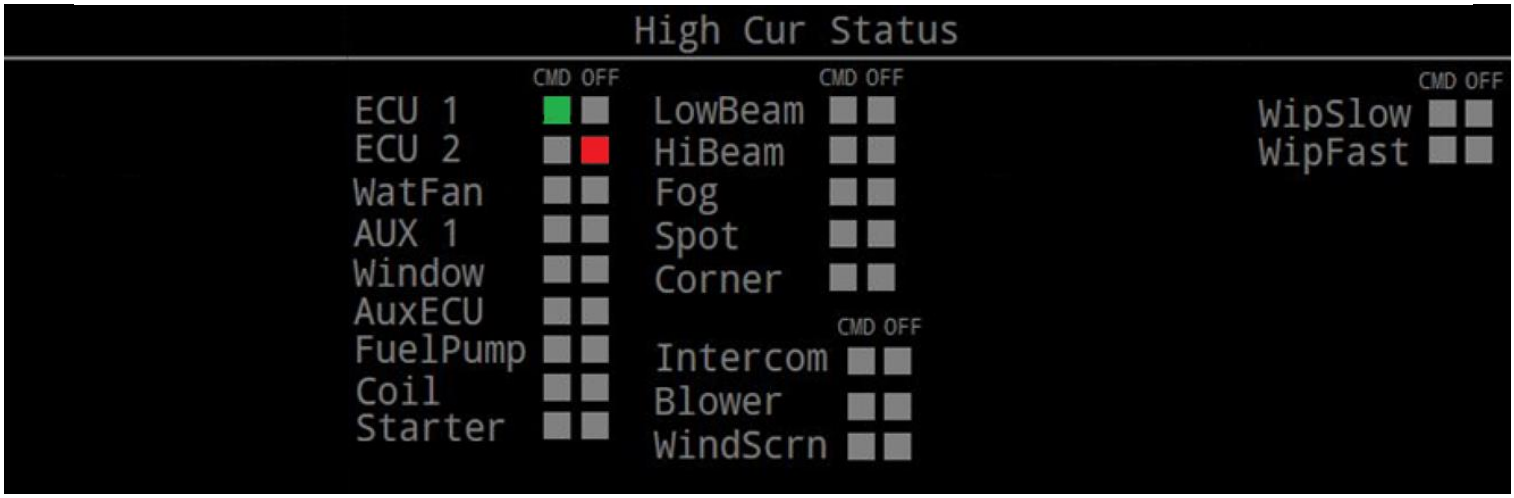
Front Brake Pad Temperature (option):

Handbrake State Active = green



Page 8: High Current Equipment Status

- The left indicator shows the command status - Active = green
- The right indicator shows the status of the electrical output – electrical fault = red



Page 9: Low Current Equipment Status

Page 10: Sensors / Actuators Diagnostic

This page indicates the operating status of all sensors and actuators in the car:

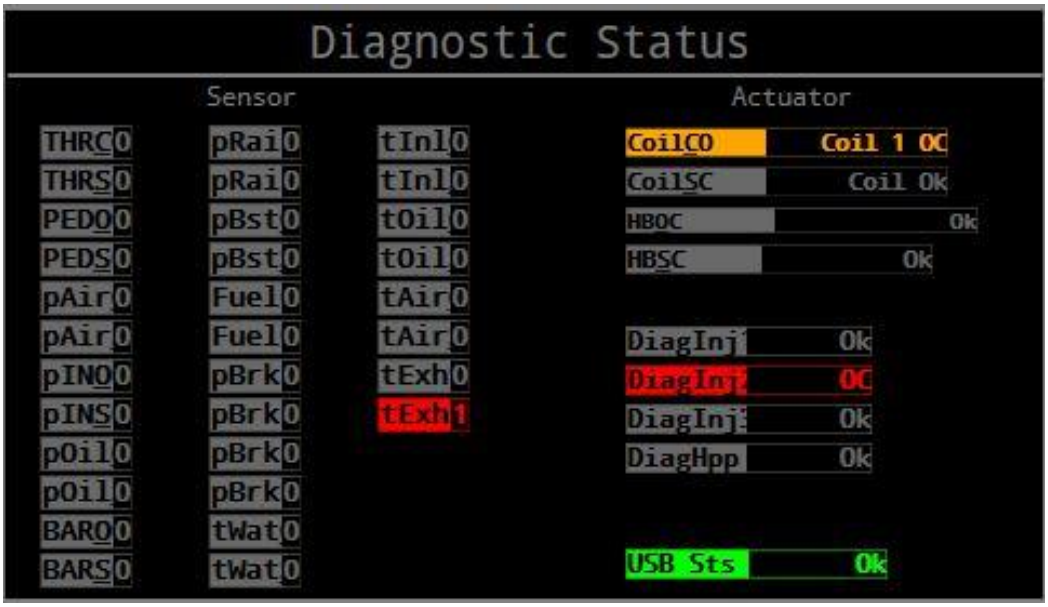
Red Indicator: Short-circuit

Orange Indicator: Open Circuit (unplugged or cut wire)

As well as the USB flash drive status (**USB Sts**):

Green Indicator: Flash drive connected and functional

Red Indicator: disconected or writing issue (format necessary)



Sensors:

THR = Throttle
PED = Throttle Pedal
pAir = Barometric Pressure (P0)
pIN = Inlet Manifold Pressure (P2)
pOil = Oil Pressure
BAR = Barrel Position sensor
pRail = HP Fuel Pump Pressure
pBst = Turbo Pressure (P2P)
Fuel = Low Pressure Fuel Pump
pBRK = Front then Rean Brake Pressure
tWat = Water Temperature
tInl = Inlet Manifold Air Temperature (T2P)
tOil = Engine Oil Temperature
tAir = Outside Air Temperature (T0)
TExh = Exhaust Temperature (T3)

Actuators:

Coil = Ingition Coils
HB = Throttle and Wastegate

DiagInj = injector cylinder 1,2,3
DiagHpp = HP Fuel Pump

USB Sts = Data Flash Drive

13.5. AUXILIARY FUNCTIONS

13.5.1. Throttle Pedal / Throttle Body / Wastegate Calibration

- Master Switch **OFF**
- Press the throttle pedal fully
- Turn the Master Switch **ON**
- Wait for the message “LIFT OFF” then take off the foot from the pedal.

- If the calibration is validated, do a **reset** (master switch OFF then ON)

- If the calibration has failed, redo the procedure from the start.

REMINDER: The calibration must be carried out after each replacement of engine, actuator (throttle body, waste gate, and pedal), ECU and engine mapping.

13.5.2. Steering wheel angle zero

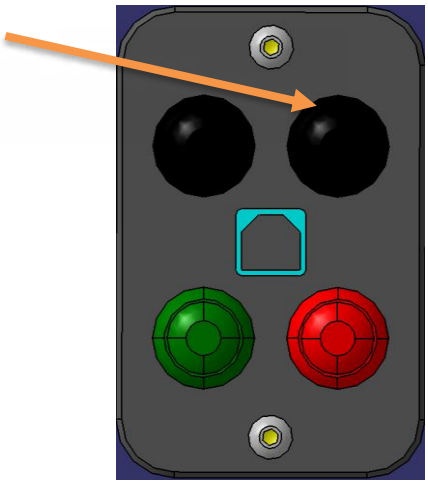
- Align the wheels in a straight line and center the steering wheel (use the straight line spacer);
- Master switch **ON**, Power **OFF**, Map **ROAD**;
- Select page 6 “**Mechanical Page 1**” on the Dashboard
- Long push on the red button next to the centrale console.

NOTE: This procedure must be carried out after replacing the steering wheel angle sensor, intervention, any intervention on the rack or steering in general, as well as replacing the ECU.

13.5.3. **Fuel tank draining**

- Connect the optional hose with the Staubli connector to the draining hose located on the left of the fuel tank :

- Main ON, Power OFF, long push on the top right button until the pump is working.



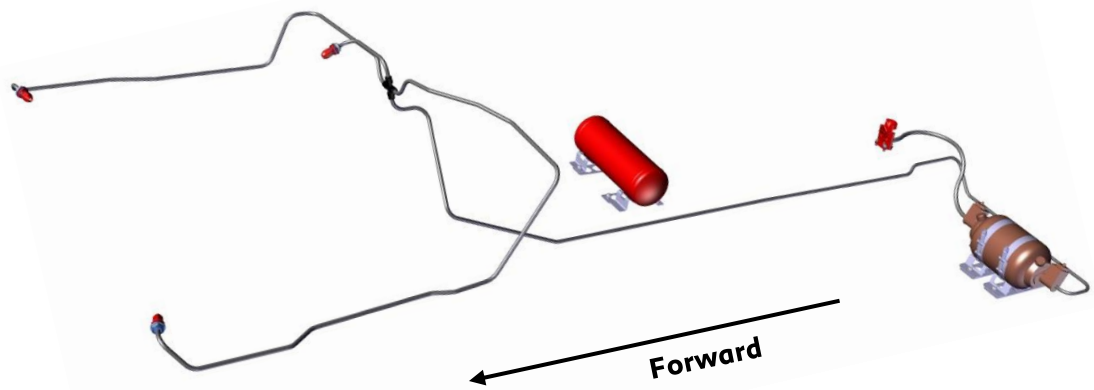
- To turn off the pump, push again on the same button.

- Be careful of the battery voltage when draining a complete tank.

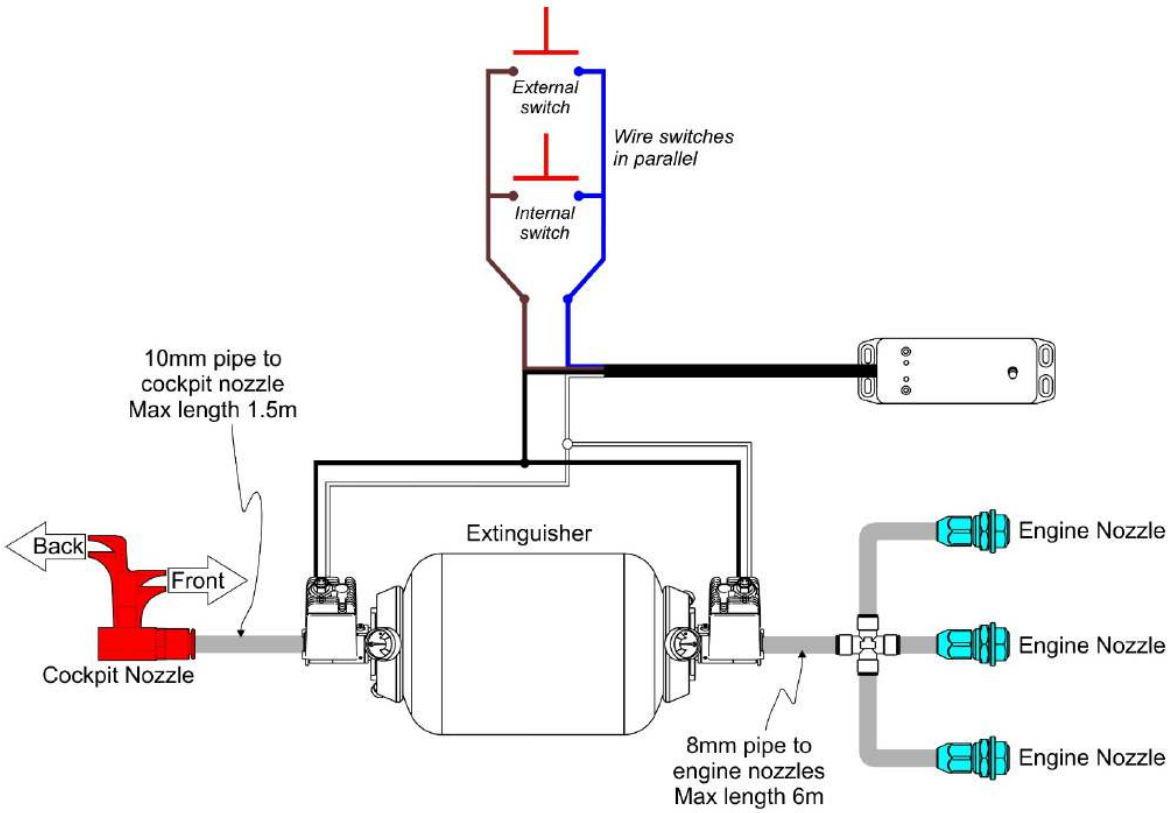
13.6. AUTOMATIC FIRE EXTINGUISHER

The CorsaRally4 is equipped with a 2kg manual powder extinguisher and a LifeLine Zero 275 automatic extinguisher complying with standard FIA **8865: 2015.**

The latter include two independent circuits, a cockpit circuit with a 360 ° nozzle and one reserved for the engine compartment comprising three standard nozzles



Schematic diagram:



WIRING COLOURS

1 - **BROWN** = SWITCH
2 - **BLUE** = SWITCH
3 - **BLACK** = EXTINGUISHER
4 - **WHITE** = EXTINGUISHER

For more information, please refer to the fire extinguisher manual, Appendix 15.9.

13.7. ELECTRICAL LOOMS

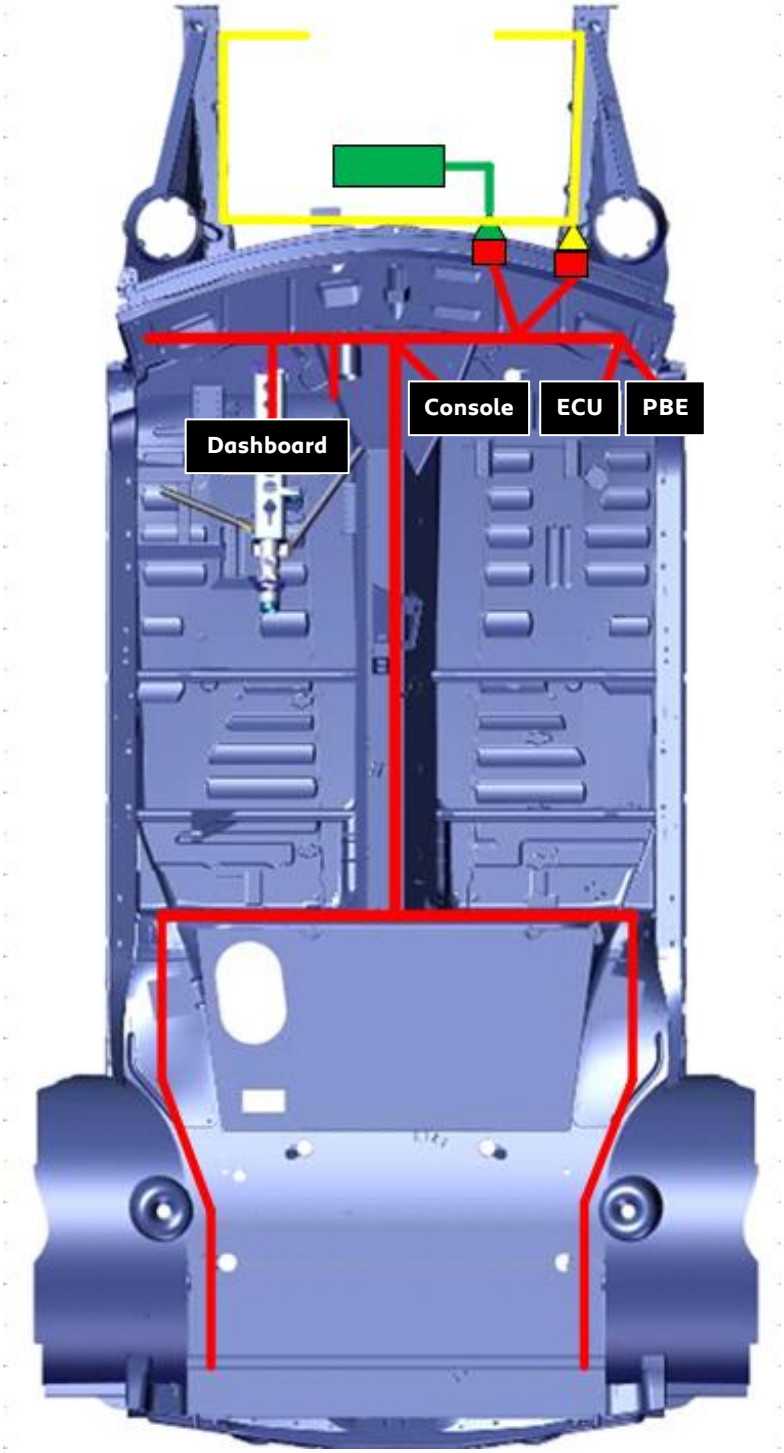
13.7.1. Position of the main electrical loom

CHASSIS LOOM

ENGINE LOOM

FRONT AUXILIARY LOOM

PBE = POWERBOX



13.7.2. **Pin-out**

ALIM DEV (+12V alimentation)

1	GND
2	Vbat

TRIP (Tripmaster – optional loom needed)

1	GND
2	VARD
3	VBAT
4	RAZ
5	AGND_1

Balise IR (Infrared beacon)

1	GND
2	Signal
3	VBat

RAZ TRIP (Reset tripmaster)

1	GND
2	RAZ

LECA (Co-driver map light)

1	GND
2	VBAT

Intercom

1	GND
2	VBAT

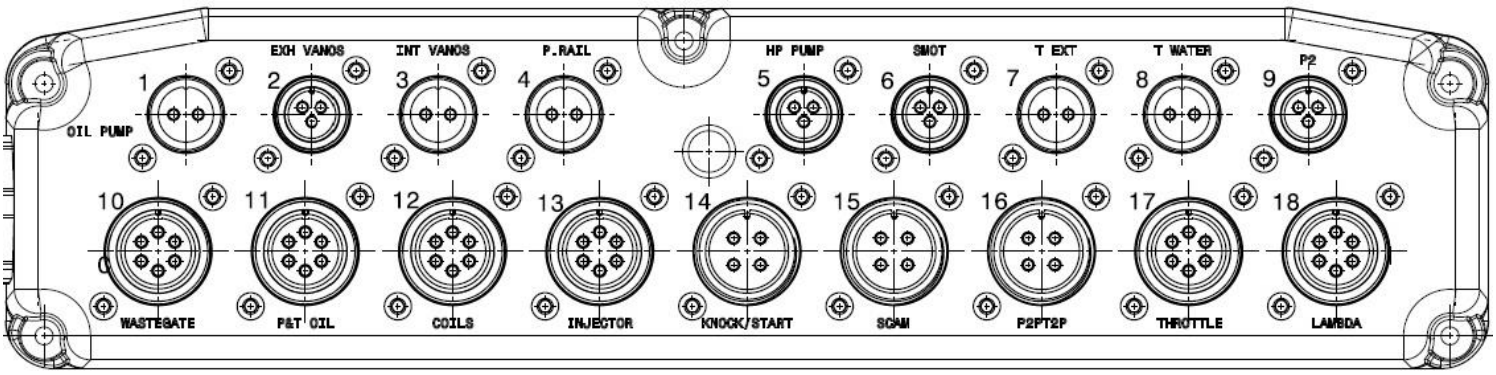
RADIO

1	GND
2	Vbat

SW LG (Optional foot washer command)

1	GND
2	Signal

13.7.3. **Engine loom**



14. DATALOGGER

14.1. WINTAX

You can use two Wintax4 licenses on the Corsa Rally4:

- An economical version 4.80.06.09 with which you can download the data only by Ethernet cable.
- A full version 4.76.00.27 (idem C3R5 - 308 TCR) which also allows you to download the acquisitions of the car via a standard USB Flash Drive.

Installation and user instructions are available on the FTP server.

For any questions about Wintax, do not hesitate to contact Opel Motorsport technical support.

14.2. SYSMA

Magneti Marelli's Sysma software (available on the FTP server in System), allows you to update your ECU yourself, with no needs to physically send it back to us.

In addition, you will be able to modify the circumference of the wheel according to the tires fitted to the car.

It is also possible to connect your computer to the car in order to view the channels in live.

The software is free and no license is required, the cable to connect the computer to the CorsaRally4 is the same used for Wintax.

14.2.1. **Engine map update**

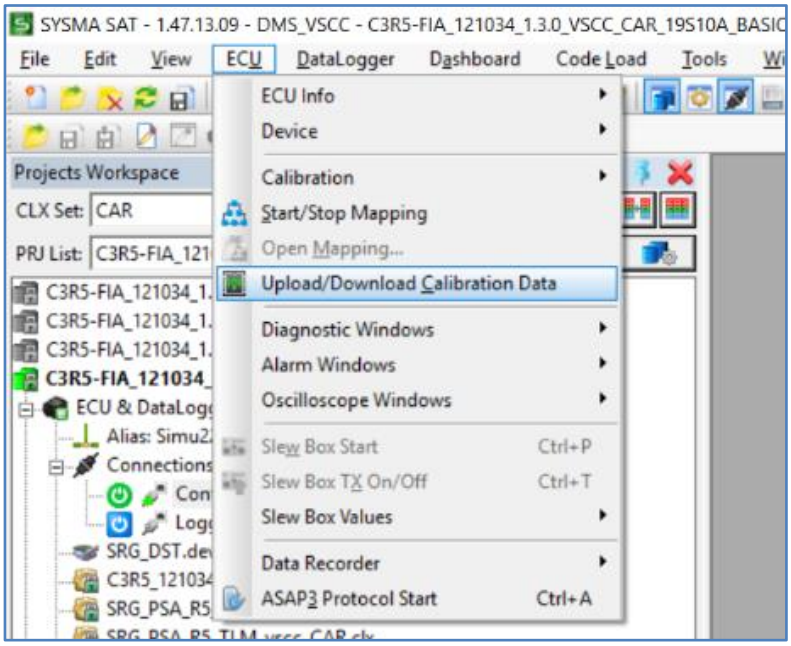
Please find below the procedure to update to engine mapping. First, you'll need to connect your computer to the car, put Main ON, with the Wintax IP address.

1- Open Sysma and load the project « PSA_R4_14.2.2.10_VSCC_XXXXXXX_Basic » available on the FTP server.

2- Press Ctrl + F8 to access to the Connection status.

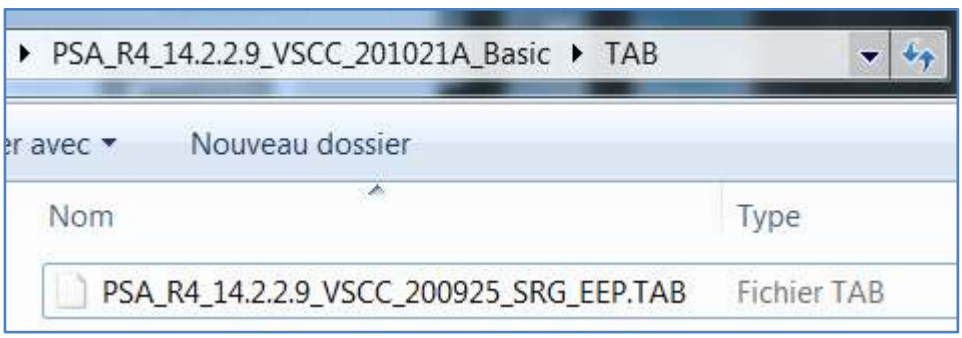
3- Click on **Control**, to the right of ECU & Datalogger. It will turn to green once the ECU selected.

4- In the ECU tab, click on **Upload calibration data.**

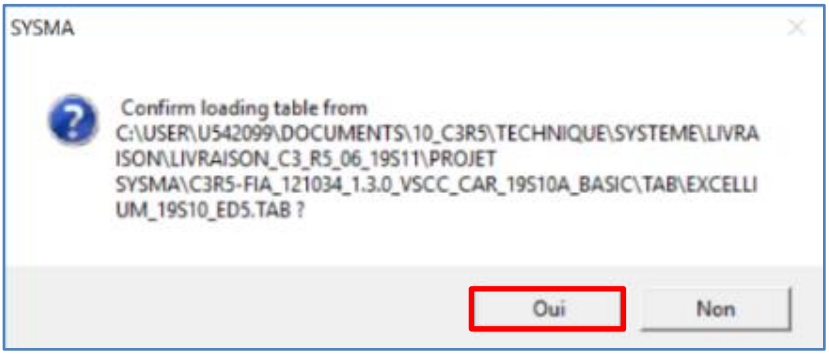


5- Click on the **TAB ➔ E2** logo to send the mapping to the ECU.

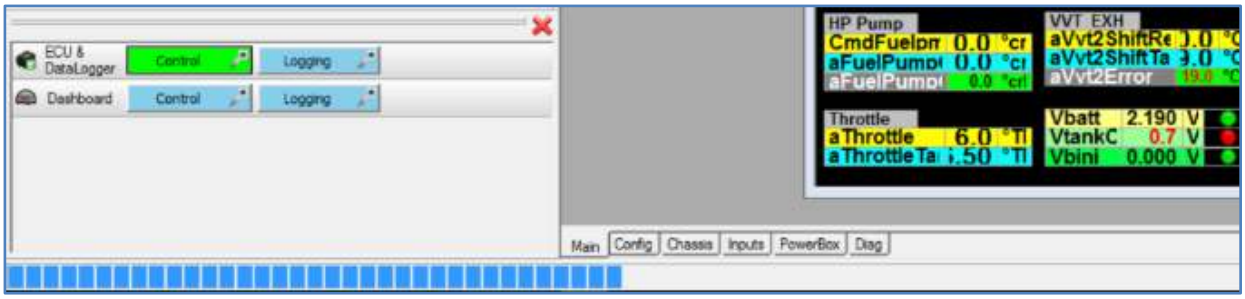
6- Go to the “TAB” folder and choose the .TAB mapping.



7- Click on **Yes**.



8- Wait until the download bar is complete.



9- Once finished, click on **Exit**.

10- Click on **Control**, once disconnected, put the Main switch OFF.

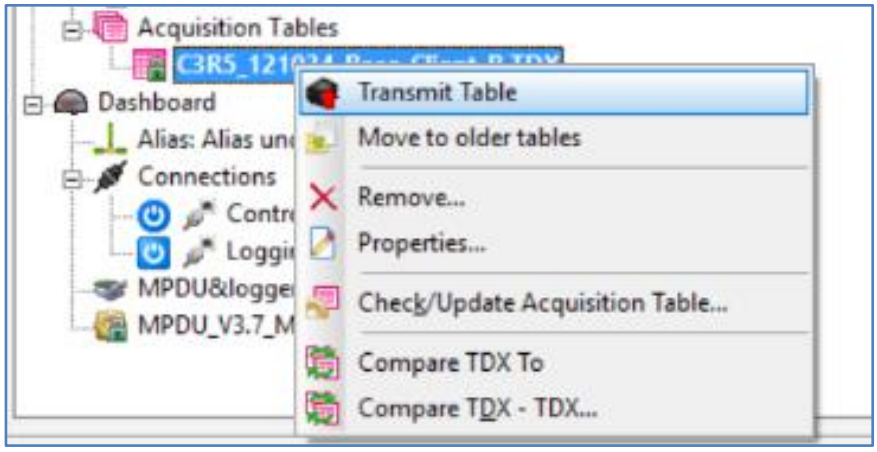
11- Do not forget to do the throttle calibration after each engine map change.

14.2.2. **Acquisition table update**

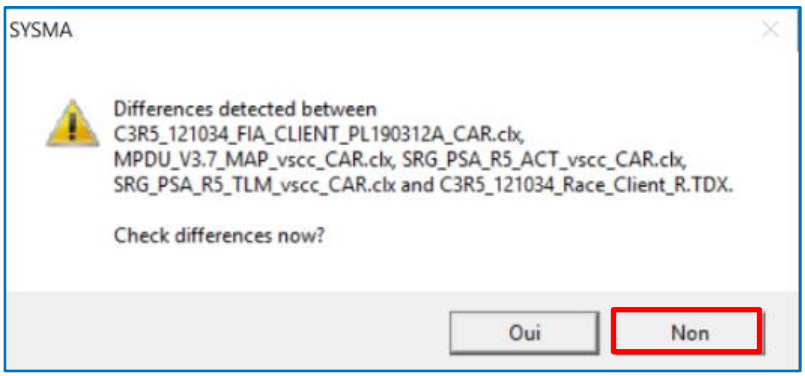
1- Open Sysma and load the project « PSA_R4_14.2.2.10_VSCC_XXXXXXX_Basic » available on the FTP server.

2- Click on **Control**, to the right of ECU & Datalogger. I will turn to green once the ECU selected.

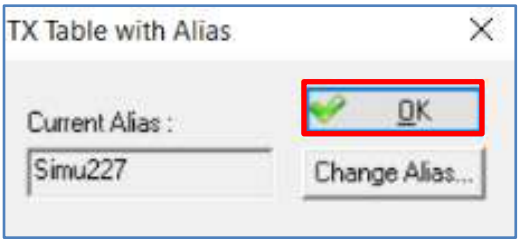
3- Right clic on the acquisition table **PSA_R4_14.2.2.9_Client_XXSXX.TDX** then click on **Transmit table**.



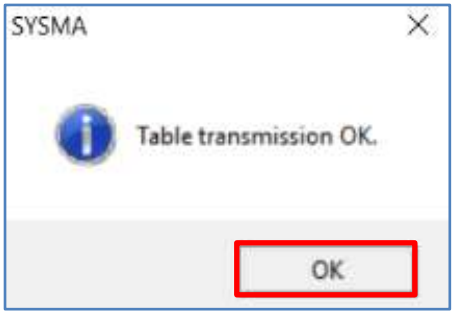
4- Click on **No**.



5- Check that the alias is correct, press **OK**, otherwise click on **Change Alias...**, and enter the desired alias.



6- Once finished, a message "Transmission table OK" appears. Validate by clicking on **OK**. Finally, disconnect the car and put the Main switch to OFF.



14.2.3. **Tire diameter change**

Via Sysma, it is possible to change the circumference of the tires in order to have a suitable speed and distance.

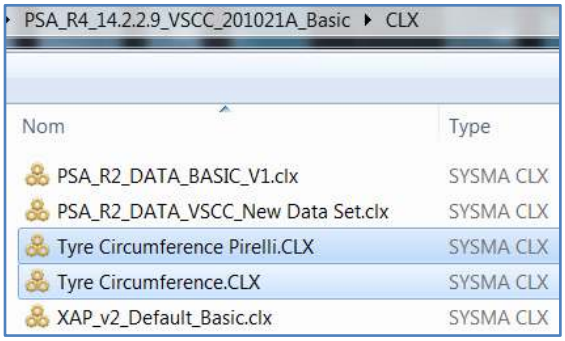
Basic values are given for Michelin **17 / 65–15** on gravel and **19 / 63-17** on asphalt.

If you are using a different size or brand of tire, proceed as follows:

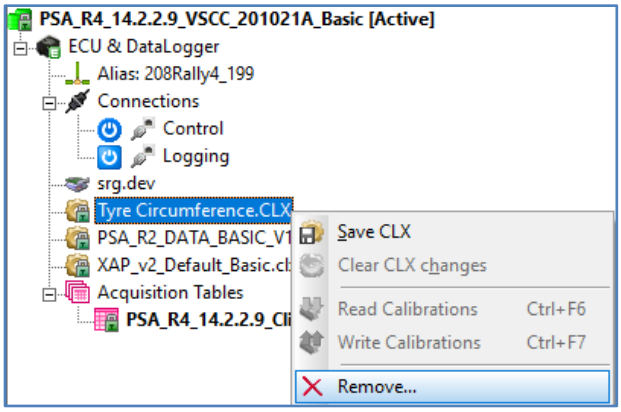
1- Open the project folder on Windows then go to :

➔ PSA_R4_14.2.2.10_VSCC_XXXXXXX_Basic ➔ CLX

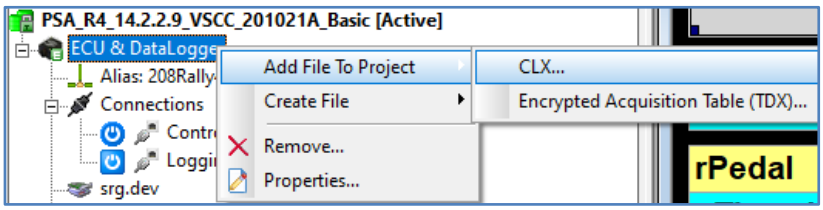
Make a copy of the **Tyre Circumference.CLX** file and rename it as desired (eg: *Tire Circumference Pirelli.CLX*).



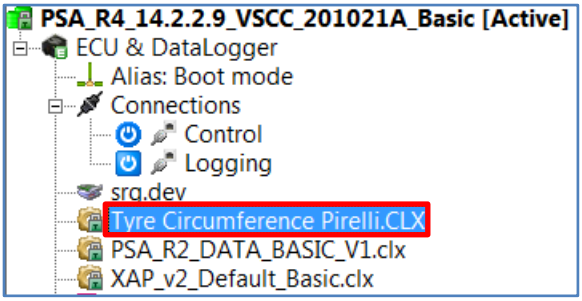
2- Open the project in Sysma, right click on the Tyre **Circumference.CLX** file, click on **Remove** and finally on **OK**.
Note: do not check "Delete also the files from the disk".



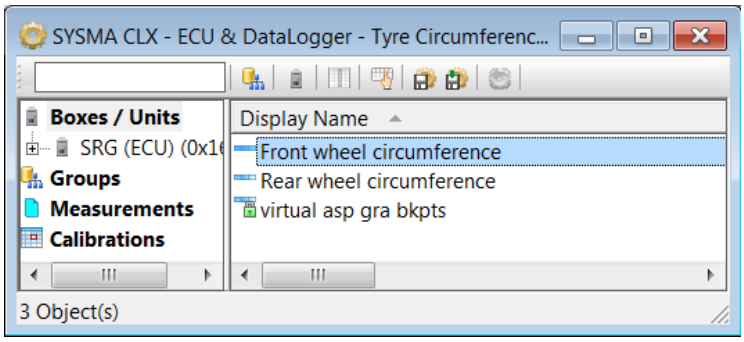
3- In the project, right click on **ECU & DataLogger**, go to **Add File To Project** then **CLX...** and select the renamed CLX file (eg: *Tyre Circumference Pirelli.CLX*). Validate.



4- Double click on the renamed CLX file, now available in the project

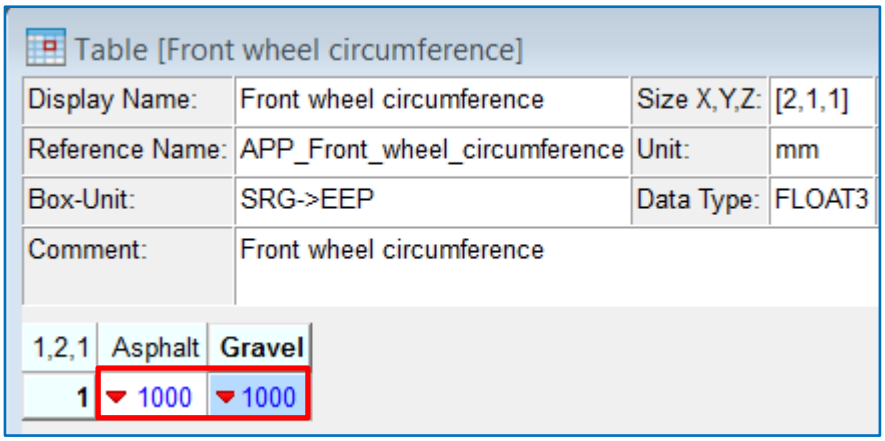


5- In the new window, double click on the line **Front wheel circumference.**



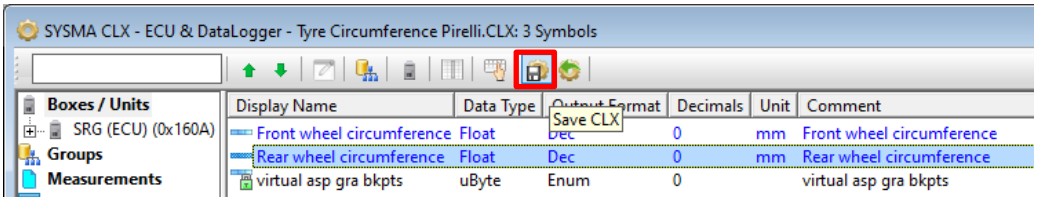
6- Enter the new tire circumference values in the **Asphalt - 1** and **Gravel - 1** cells; instead of 1916 and 1934 and press **Enter** each time.

Once modified, the values will appear in blue. Then close the window.

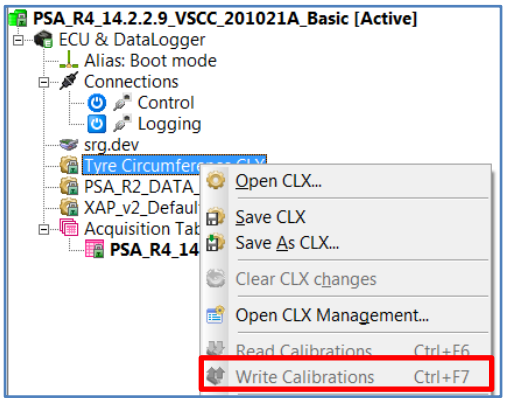


7- Do the same for the line **Rear wheel circumference**.

8- To save the modifications click on **Save CLX**.



9- Connect the computer to the car (see 14.2.1.3), once **Control** has turned green: right click on your new map and select **Write Calibration**.



10- Reset the car.

15. APPENDIXES

15.1. FLUIDS AND GREASE

	Type	Reference	Quantity	
Engine Oil:	0 W 30	PS97727A10	3,5 L	+1,5 L radiator
Gearbox Oil:	75 W 90	1C2340626A	1 L	+ 0,1 radiator
Powersteering Fluid:	LDS	1615099680	2 L	
Coolant:	PSA -35°C	1637756480	6,5 L	
Brake Fluid:	BREMBO THC64	PS97633A10	1,5 L	
Driveshaft Grease:	N321186 – 50G	Z0A0030929	160g / 130g	Wheel / Gearbox

15.2. TIGHTENING

Available on the FTP server in **Documents ➔ Documentation ➔ Tightening_Torque.**

15.3. MAINTENANCE SCHEDULE

Available on the FTP server in **Documents ➔ Documentation ➔ Maintenance_schedule.**

15.4. FIA SEALS

Available on the FTP server in **Documents ➔ Homologation**.

15.5. BASE SETUP

Please find on the FTP in **Documents ➔ Setup** three base setups, one for gravel and two for tarmac: high and low grip.

15.5.1. **Gravel**

15.5.2. **Tarmac – Low grip**

15.5.3. **Tarmac – High grip**

15.6. FIA FUEL TANK CAPACITY MEASUREMENT

Here is the method for measuring the volume of your fuel tank, practiced by the FIA. We invite you to perform this procedure every 6 months.

Any other measure is considered inadmissible.

Method for checking the total capacity of the WRC fuel tank

(article 401d de l'extension WRC)

The method for checking the total capacity of the WRC fuel tank is as follows:

1) The competitor will supply the material, tools and extinguishers needed.

2) Fuel tank must be fitted with its leakproof box (see article 255A) on the WRC car.

3) The WRC car to be checked will be located on a flat surface.

4) The fuel supply outlet for the engine will be disconnected and a leakproof cap will be fitted on the fuel tank.

5) The fuel return into the tank will be disconnected and a leakproof cap will be fitted on the fuel tank.

6) The breather in conformity with Article 253 of Appendix J will be disconnected and a leakproof cap will be fitted on the fuel tank.

7) The petrol gauges will remain fitted on the fuel tank.

8) The fuel tank must be filled completely (using the two quick-action couplings for refuelling as specified in the Homologation Regulations for WRC kit-variant).

9) By means of the FIA sampling connector, all the fuel taken on board and available by this method will be taken out, measured and accounted for.

10) After a complete withdrawal of the fuel by the methods given above, if fuel is still found in the low pressure pumps, internal fuel lines, etc. and the depths of the tank, it will be taken out by dismantling and stocked. It will be accounted for. All these actions, emptying and transfers will be made by the competitor's mechanics under the orders of the Technical Delegate.

11) The amounts of the various quantities of fuel taken out according to this method will be added together to obtain the total capacity of the fuel tank. The maximum tolerance will be 0.50 per 1000 on the quantity of fuel taken out and there will be no corrections for temperature and/or density.

12) After the final measurement of the amount taken out, the competitor, while present during these checks, will acknowledge that all the fuel has been taken out by signing the final measurement sheet.

13) In the event of contestation or appeal, if it is decided to repeat the measurement at once, the replacement of all parts removed must be made by the competitor.

15.7. SPECIFIC TOOLS

Here is the list of specific tools available for the CorsaRally4.
The tools necessary for the gearbox rebuild are listed in the Sadev manual.

15.7.1. **Engine**

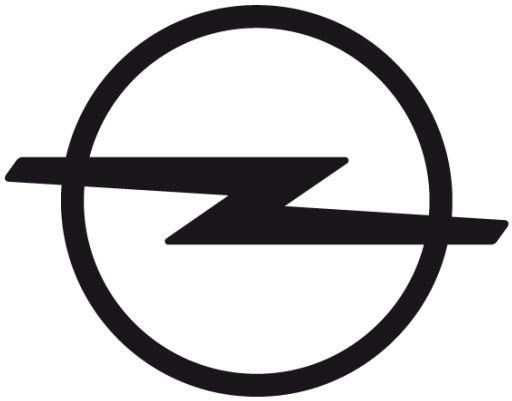
Reference	Designation	Quantity
1607274880	Water pump belt fitting tool	1
904673108A	Spark plug socket	1
1607169280	Engine cylinder leak rate measuring tool	1
904647071A	EB2 workshop engine stand	1

15.7.2. **Others**

Reference	Designation	Quantity
1E1421287A-OUT	Öhlins damper rebound setting tool	1
1F2164131B-OUT	Brake caliper bleeder (wrench)	1
1E1363779B-OUT	Differential preload tool (wheel)	1
9780AF	Fuel pump nut tool Set	1
1608323980		1
904678451A	TCA Nut socket	1
904661158A	Straight line spacer	1
904672751A	Steering rod tightening tool	1
0D1121391A	Engine mount Silent bloc assembly/disassembly Tool Set	1
0D1121393A		1
0D1121395A		1
0D1121396B-OUT		1
6933-16		3
1E3164611E-OUT	Wheel nut tightening cross D18	1

15.8. AUTOMATIC FIRE EXTINGUISHER MANUAL

The manual is available on the FTP server in **Documents ➔ Documentation**.



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