RENAULT SPORT

TECHNICAL BULLETIN N°11

CLIO CUP

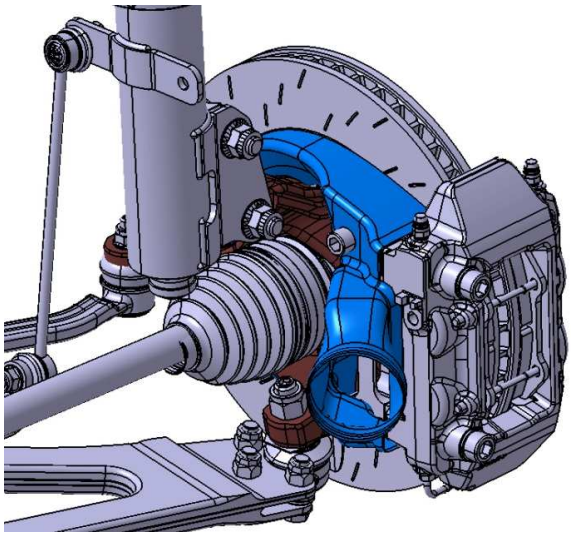
REFERENCE	BT_2013_X98CUP_11_UK
DATE	2013 September 20th
SUBJECT	Evolution for the Eurocup Clio Paul Ricard meeting

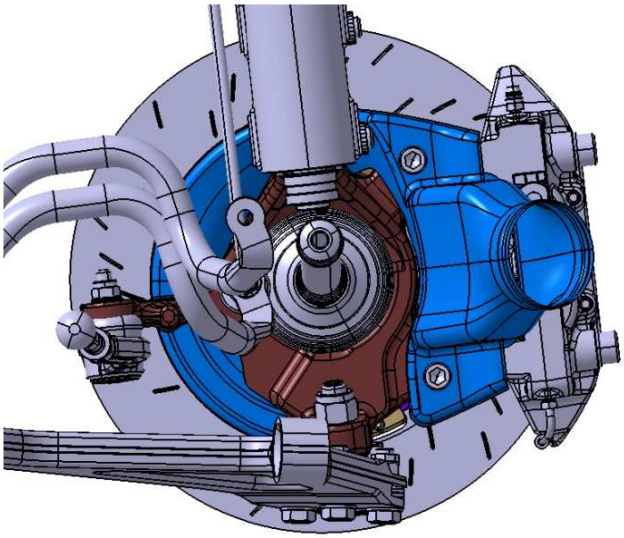
CONCERNED : 2013 EUROCUP CLIO

Please find a list of updates / evolutions for the Paul Ricard meeting and the future

1) Front brake cooling

To raise the safety coefficient on the front brakes performance, we inform you that Renault Sport Technologies is working on an important solution to cool them. The purpose is to bring fresh air from the bumper directly to the brake disc hat.





This new solution will be introduced in its definitive configuration for the Barcelona meeting (October 20th)

Waiting for this to be applied, a provisory cooling solution that has been tested, will be provided for the Paul Ricard meeting. It consists in 4 simple air deflectors fitted on the calliper support and on the chassis as indicated next page.

2 x Air deflectors fitted on callipers (represented in green next page)

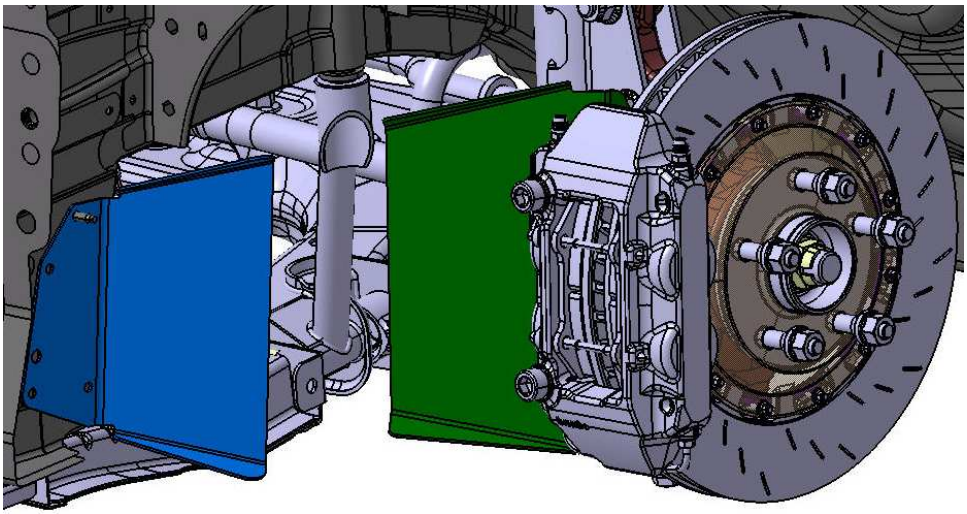
They are identical for left and right hand side and are fitted directly using the calliper support screws.

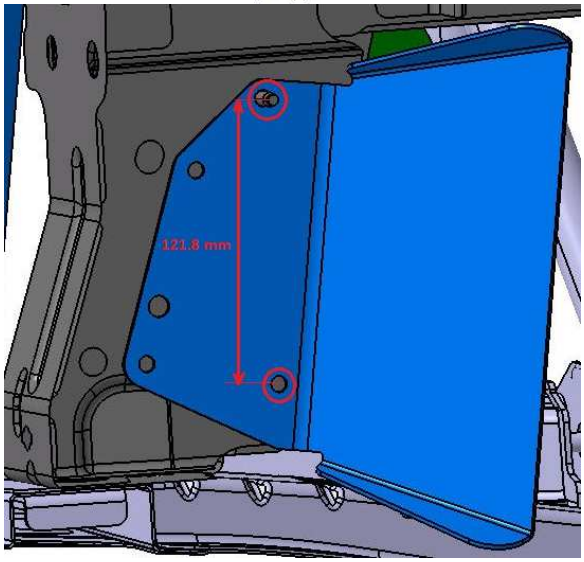
2 x Air deflectors fitted on the chassis (represented in blue next page):

The right and left hand side ones are symmetrical and fitted differently:

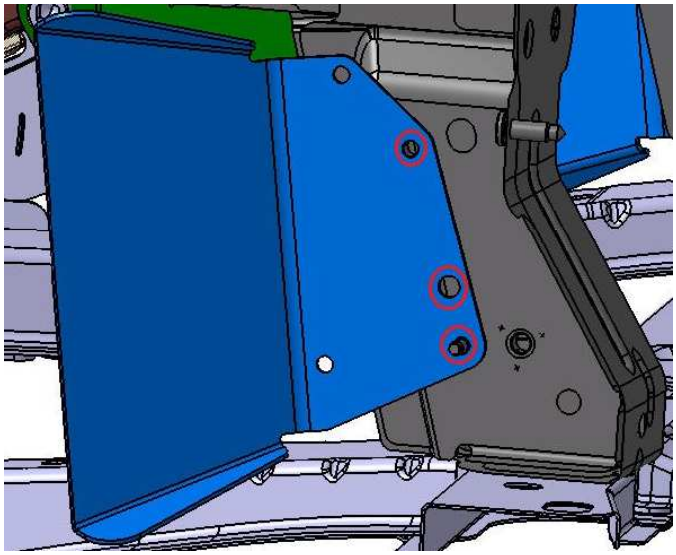
- On right hand side, it is fitted using :
  - Bottom : 1 studs of the chassis (1 hexagonal nuts M6 with integrated washer)
  - Top : 1 threaded hole of the chassis (1 CHC M8 + washer)

- On left hand side, it is fitted using :
  - Bottom : 1 rivklé M6 + 1 screw CHC M6 (hole to drill on the chassis as indicted below)
  - Top :1 stud on the chassis (1 hexagonal nuts M6 with integrated washer)





Left hand side

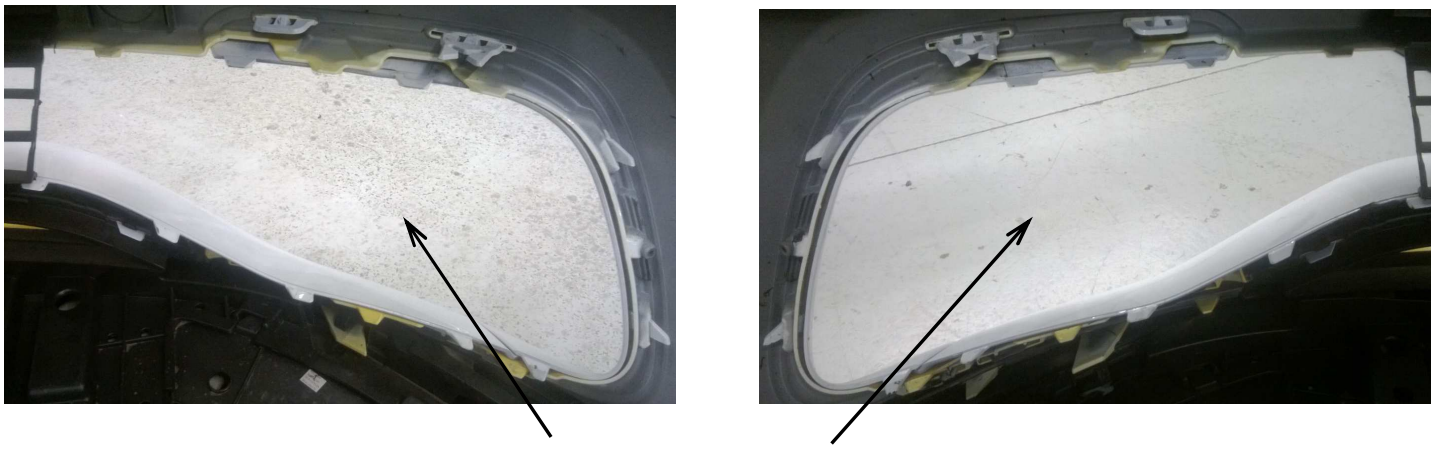


Right hand side

To let the air going through the front bumper, a cut has to be performed on it as indicated below:

CAUTION:

- Only the black plastic area has to be cut. No modification of the other parts is allowed
- The front bumper inside area must remain as indicated below (all original fasteners mustn't be cut)



Black fence must be fitted

IMPORTANT :
To protect the engine compartment, a fence (1700x300mm) has to be fitted on every cut area of this plastic grid.
This fence will have to be painted in black by teams.

NOTE :

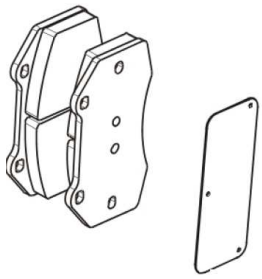
- As this kit is provisory, no commercial references have been created

- The kit is includes:
  - -4 air deflectors
  - Fasteners (screws + nuts + rivklés)
  - Fence to paint in black

will be distributed free of charge on Thursday 26th directly at Renault Sport spare parts truck.

This provisory kit is **mandatory** for the Paul Ricard meeting and will have to be removed once the definitive kit will be ready

We inform you that the front brake pads heat shields (7711 167 236) are now **mandatory**. We remind you that the maximum advised mileage of this part is 600km (approximately 2 Eurocup meetings). If you go over this mileage, the efficiency is considerably reduced.



2) Rear Brake pads

Reminder : As indicated in the previous Technical Bulletin (TB n°10), the Performance Friction brake pads will be mandatory from Barcelona meeting for the front axle.
The only allowed brake pad allowed on front axle will be : 8201 471 243 (PFC compound 08)

On the rear axle, the following PFC compounds will be introduced:

8201490463 (compound 097 => low bite, low torque
8201490462 (compound 011) => high bite, high torque

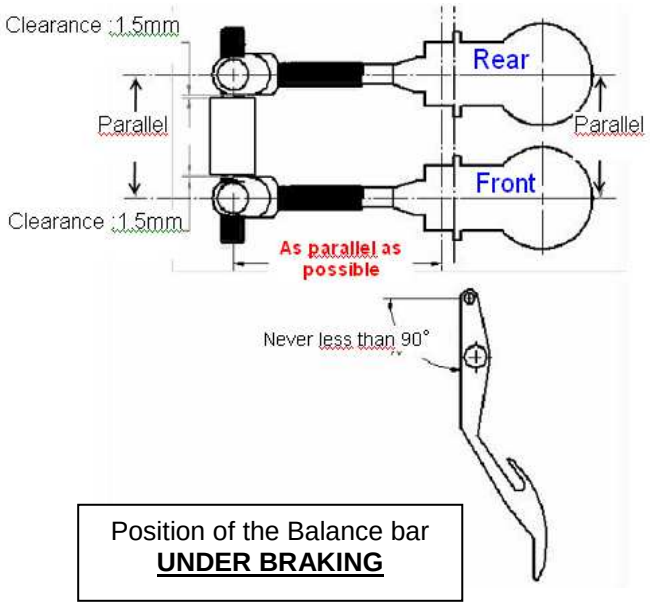
These 2 brake pads will be allowed in addition with the current CL BRAKES references (RC6 and RC5) for the meeting of Paul Ricard and will be mandatory in a near future to replace the CL BRAKES ones (date of application to be confirmed)

3) Brake setting

Regarding brake problems encountered during the Red Bull Ring meeting, a majority of them were due to bad settings (balance bar, rear pressure limiter and master cylinder threaded rod length)
For this reason, we think necessary to remind you the following setting procedure and we kindly ask you to follow it carefully

3.1 Master cylinder setting

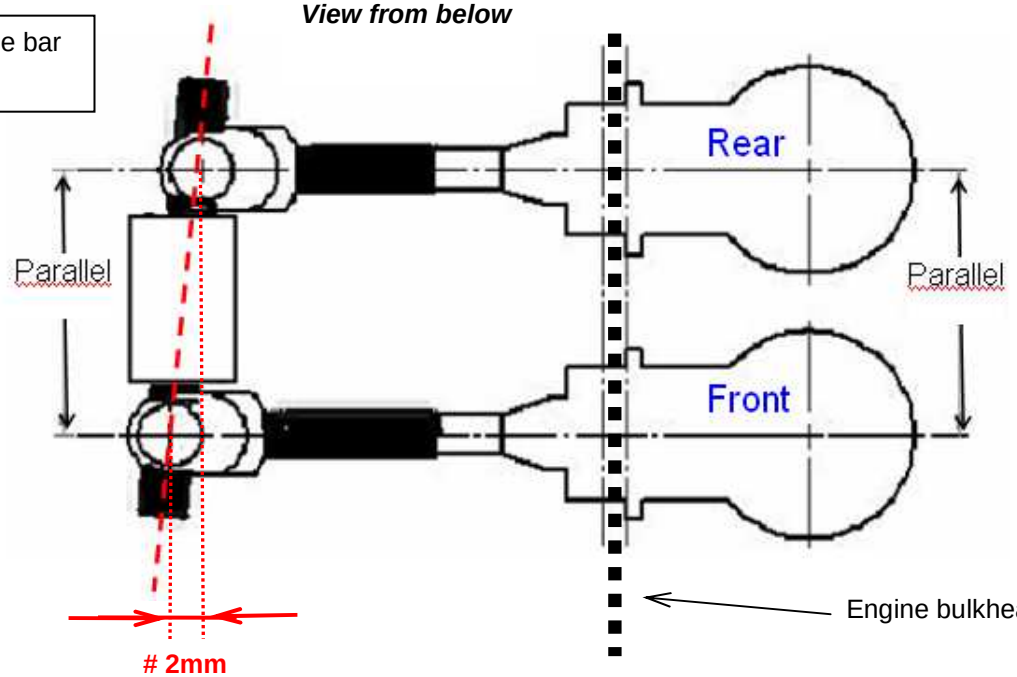
Under braking : The balance bar and the master cylinder threaded rods must be set as indicated below :



Position of the Balance bar
UNDER BRAKING

As both master cylinders have a different stroke, you have to adjust the master cylinder rod lengths with the 2 balance bar brackets at rest (the front master cylinder push rod will be longer than the rear master cylinder one of a few mm as the front master cylinder will travel more under braking). The setting should be as explained below :

Position of the Balance bar
AT REST



Driver compartment

Engine compartment

3.2 Brake balance bar fitting

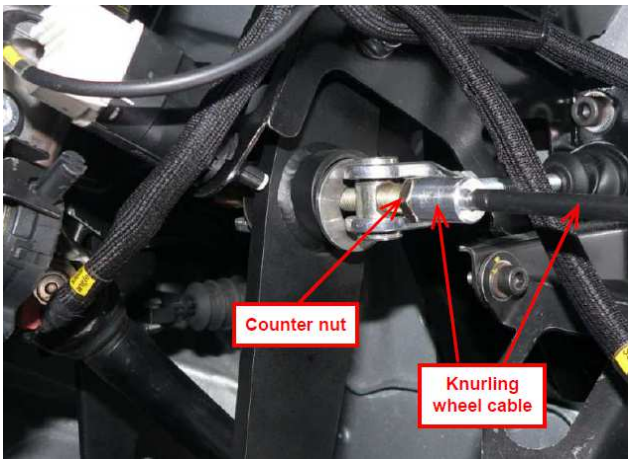
The car is delivered with a classic balance bar, adjustable by turning the threaded rod to set the brake balance between front and rear axle.

NOTE :

It is recommended to fit a balance bar cable + knurling wheel (77 11 158 138) on the facia switch panel, as indicated below:

CAUTION :

If the balance bar knurling wheel is not fitted, make sure that after each brake balance adjustment, the 2 counter nuts are correctly screwed and tightened against the ball joint.



3.3 Rear Brake limiter

Counter-clockwise :
Decrease the limit pressure on rear axle

Clockwise :
increase the limit pressure on rear axle (maximum 40b)

Purpose :

During big braking phases, rear wheel locking can appear depending on the chassis setup.
That's why the maximum pressure allowed through this part is #40bars (calibrated)
This limiter is active during every braking phases and is totally independent from the brake balance.

Setting :

For an efficient braking, we strongly recommend you to be always up to 30b minimum
Under 20 bars, the rear brakes are not efficient (you can turn the wheel by hand almost freely). It means that almost 100% of the brake balance is physically on the front axle.

CAUTION :

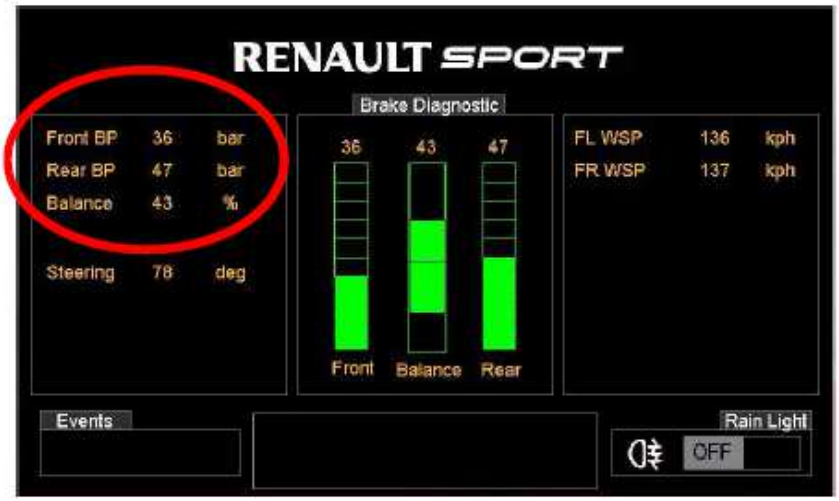
When the rear brake pressure thresholds is reached and if the driver keeps on braking harder, the pressure goes fully on the front axle while rear pressure stays at the defined threshold (see the graphic next page).

➔ To set the rear limiter threshold with the brake balance, please follow the procedure described on §3.4

3.4 Brake Balance setting

The brake balance setting is primordial for an efficient and reliable braking, it must be set and checked prior to any practise. The front and rear brake pressure sensors are fitted on every car, they are needed for a correct brake balance setting. To set it, please follow the indications below :

1) Go to the dashboard page “chassis diagnostic” to check the value of the front/rear brake pressure



2) Tighten the rear brake pressure limiter clockwise (+) to allow the maximum pressure (must be around 40 bars)

NOTE :

- The brake balance value has to be considered only **before the rear brake limiter pressure is reached** (see Rear BP maximum value)
- For a correct brake balance setting we ask you to be at 40b on the rear limiter to ease the setup balance.

3) Adjust the position of the balance bar threaded rod by turning it (manually or using the knurling wheel) to the desired position taking into account that the brake balance (% of total pressure on front axle) must be constant till the maximum rear brake pressure is reached.

Counter-clockwise :
Decrease the balance of the front axle

Clockwise :
Increase the balance on the front axle

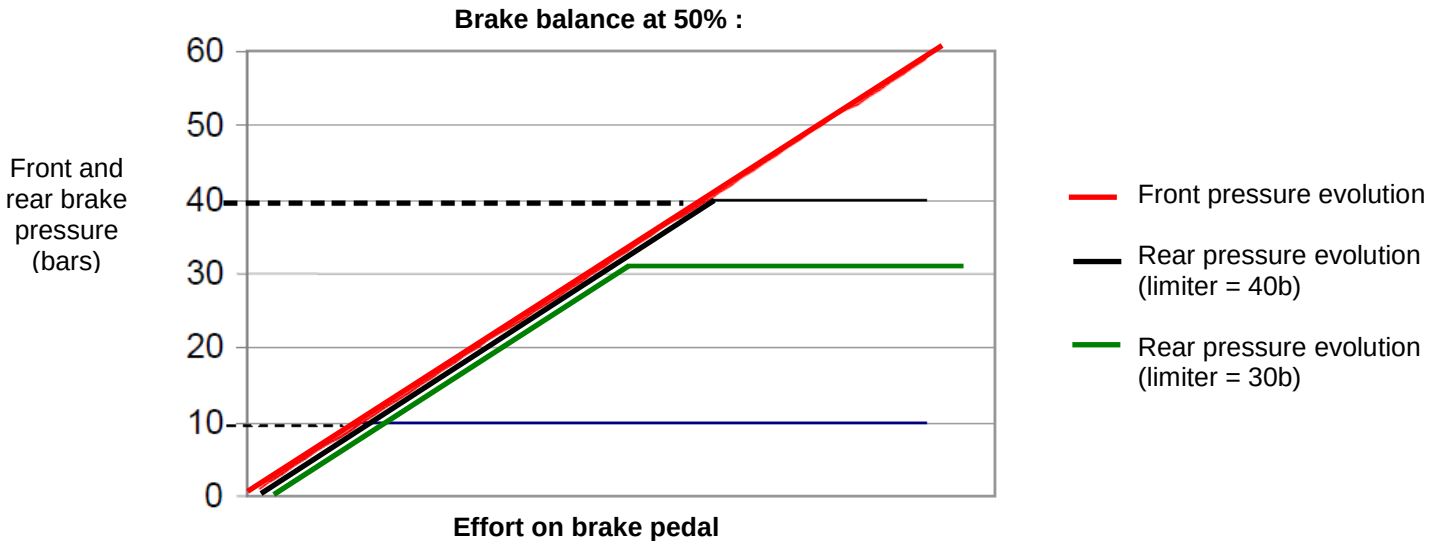
NOTE :

The brake balance must be set at rest (no brake effort) and has to be controlled regularly during the setup

When the maximum rear brake pressure is reached, the brake balance suddenly increase, which is normal because the full pressure goes on the front axle (nothing more on the rear)

It’s important to stay under the maximum rear brake pressure (40b) to set correctly the brake balance

We strongly recommend you to set a brake balance between 50% and 53%

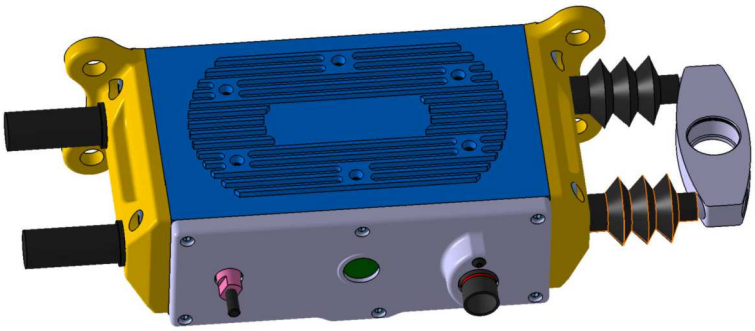


The graphics shows what you can observe in Toolbox with front and rear brake pressure sensors. As the brake balance is set at 50%, front and rear axle increase evenly when the driver touches the pedal. The rear brake pressure is limited at the defined threshold. When this threshold is reached, the pressure on the front axle keeps on increasing and the rear pressure stay stable (which modifies the brake balance).

4) When the brake balance has been adjusted:

- Tighten the 2 counter nuts (if manual mode) against the 2 ball joints
- Set the rear brake pressure limiter to the desired value (recommended to be up to 30b)

4) XAP gearbox actuator



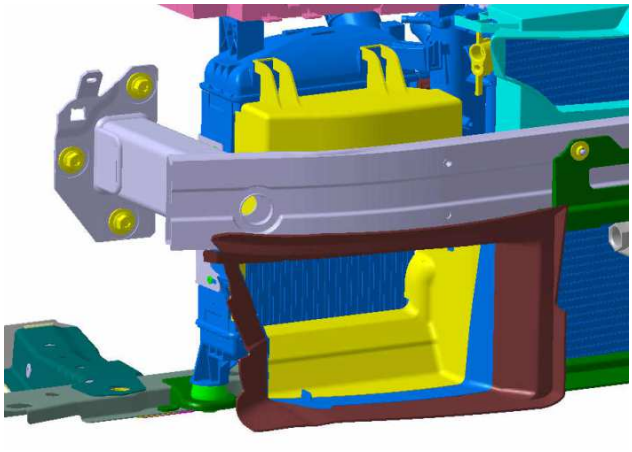
We inform you that a software update of the actuator will be performed by XAP Thursday 26th afternoon directly on cars, there is no need to remove them from the car.

After several month of existence, we will ask to several team to remove 1 actuator from a car for a general check. This operation will be performed by the XAP technical responsible during the weekend.

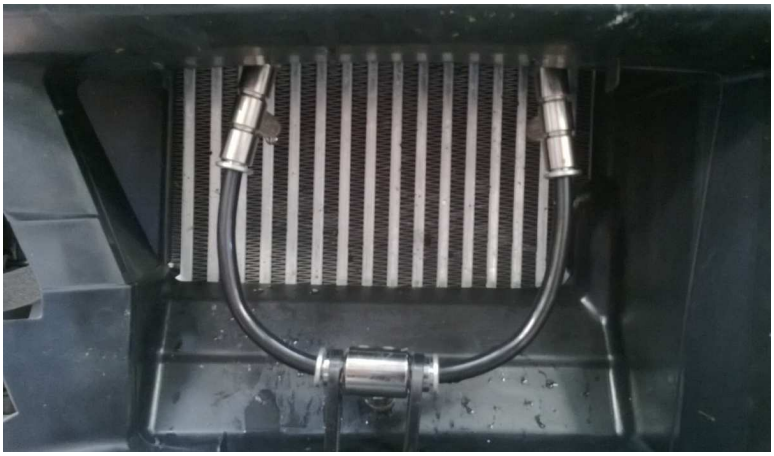
5) Turbo air exchanger cooling

Regarding high air intake temperature experienced during the last meeting and despite the engine mapping adjustments already performed, Renault Sport Technologies decided to apply cool water spraying on the turbo air exchanger.

A prototype has been tested with very good results



Original version



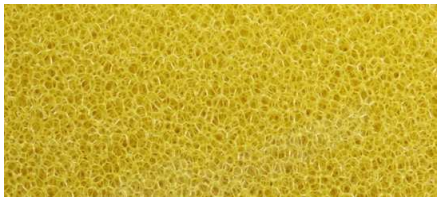
Prototype version validated

For supplying reason, this kit can't be applied for the Paul Ricard meeting but will be available for Barcelona.

We will come back to you with more information within 3 weeks

6) Fuel cell foam

To help reducing premature fuel defuse, it is now allowed to fit foam inside the fuel tank (optional).



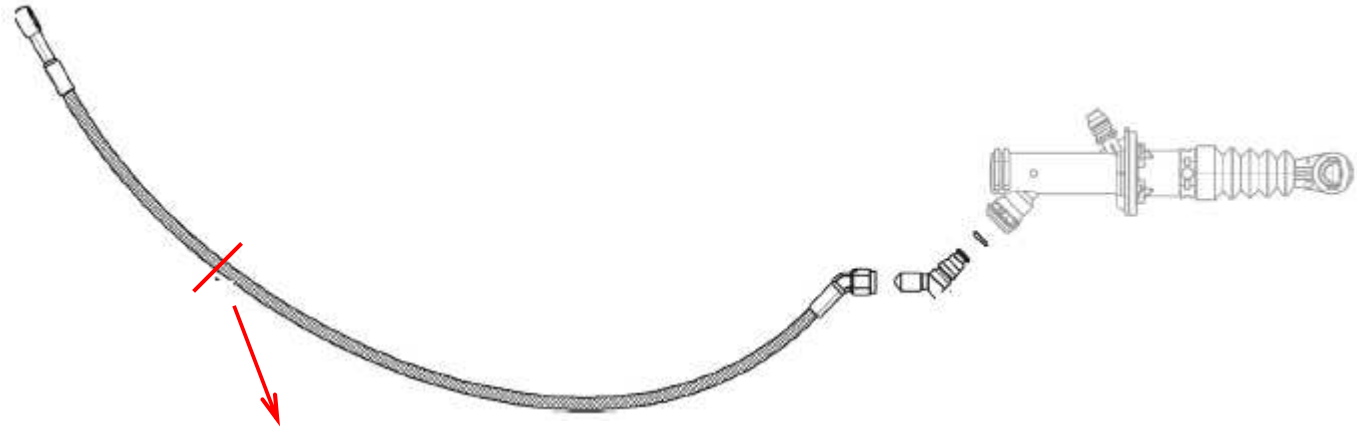
The dimension of the standard foam block is: 170 x 300 x 200mm. The blocks are available to the Renault Sport spare parts truck under the reference 8201 489 594

The number and the shape of the blocks is free (it is allowed to cut the blocks)

⚠ Make sure that the fuel gauge rod and the float are free of moving (not blocked by the foam) to allow a right calculation of the fuel level on the dashboard

7) Slave cylinder feeding

It is now allowed to add a quick release coupling on the slave cylinder feeding hose.



Female union :
SPH03.7652/BA/L/KR/JE

male union :
SPH03.1652/BA/L/KR/JE

Only the STAUBLI references mentioned above are allowed.

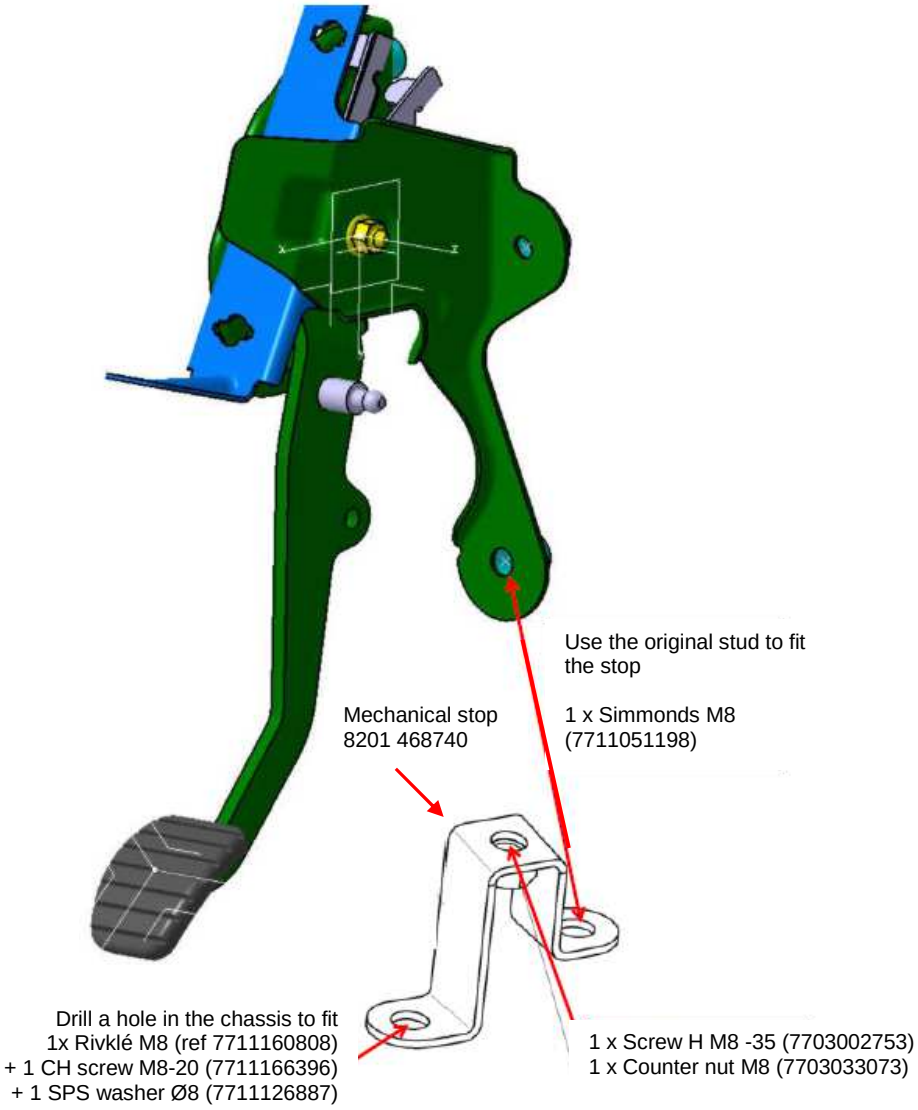
These parts are **not available** at the spare parts department but can be found easily contacting every motorsport spare parts supplier

8) Clutch pedal mechanical stop

To avoid damaging the clutch master cylinder rod, we strongly advise you to not use the full stroke ofthe clutch pedal.

A mechanical stop to fit both on the engine bulkhead and on the pedal support will be available on Thursday 26th directly to Renault Sport spare parts truck with the corresponding fastening kit.

The stop must be fitted as indicated on next page :



This mechanical stop is now **mandatory.**

All brand new cars will be equipped with this part in the future