



LEON CUP RACER



2015

TECHNICAL MANUAL

Table of contents

1	TECHNICAL INFORMATION	4
1.1	Leon Cup Racer Display.....	4
1.2	Dimensions and weights.....	5
1.3	Body shell	6
1.4	Powertrain.....	7
1.5	Rim & Tire	9
1.6	Electronic units.....	9
2	DRIVERS CONTROL	11
2.1	Main console	11
2.2	Steering wheel module	11
2.3	Gear lever functions	12
2.4	Car launching systems	13
2.5	Speed limiter system.....	14
2.6	Driver has to consider	15
3	DISPLAY & FUSE BOX.....	16
3.1	Display alarms and shift lights	16
3.2	Data acquisition analysis	18
3.3	MXG channel expansion scheme	19
3.4	Fusebox	21
3.5	Auxiliary connectors	24
4	SETTING ADJUSTMENTS.....	27
4.1	Delivery car set-up.....	27
4.2	Steering rack centering.....	28
4.3	Suspension adjustments	28
4.4	Front Camber and Toe adjustment.....	29
4.5	Rear Camber and Toe adjustment	29
4.6	Dampers	31
4.7	Antiroll bars.....	34
4.8	Kinematics	34
4.9	Brakes	36

4.10	Aero	37
5	WORKSHOP MANINTENANCE	38
5.1	FIRST ROLLOUT	38
5.2	Check list	38
5.3	Vehicle & parts identification.....	39
5.3	Fluids information	40
5.4	Engine service.....	41
5.5	Air filter	41
5.6	Gearbox & Slip differential service.....	43
5.7	FDX - Slip differential control & service.....	43
5.8	Fuel	44
5.9	Electronic modules	45
5.10	Airjack.....	46
6	PARTS MILEAGE.....	47
7	SAFETY	48

1 TECHNICAL INFORMATION

1.1 Leon Cup Racer Display

Engine

\ Type.....	Turbocharged; 4-cylinder in line
\ Fuel supply system.....	Direct fuel injection
\ Displacement (cc).....	1984 cc
\ Bore and stroke (mm).....	82,5 x 92,8
\ Maximum power (PS/rpm).....	330 PS
\ Maximum torque (Nm/ rpm).....	410Nm
\ Electronic control unit.....	Continental SIMOS
\ Exhaust / dB.....	Racing catalysed 104dB
\ Fuel tank capacity.....	55 lts Standard tank with additional
\ Speed limiter system.....	active 60km/h
\ Launch control system.....	active

Transmission

\ Transmission.....	Front-wheel-drive
\ Gearbox.....	6 speed DSG
\ Differential.....	VAQ, electronically managed
\ Clutch.....	Multi disc oil cooled
\ Shift control.....	Electronic on steering wheel

Chassis and Suspension

\ Front suspension.....	McPherson, adjustable in height, toe and camber
\ Anti-roll bar.....	Front and rear adjustable
\ Rear suspension.....	Multi-link axel, adjustable in height, toe and camber
\ Front brakes.....	6-piston callipers, 362 mm steel ventilated discs
\ Rear brakes.....	272 mm steel discs
\ Brake pedal.....	Unitary with brake balance regulation
\ Steering system.....	Full Electrical power steering rack
\ Rims.....	SEAT Sport 10"x18"
\ ABS.....	Removed

Body and aerodynamics

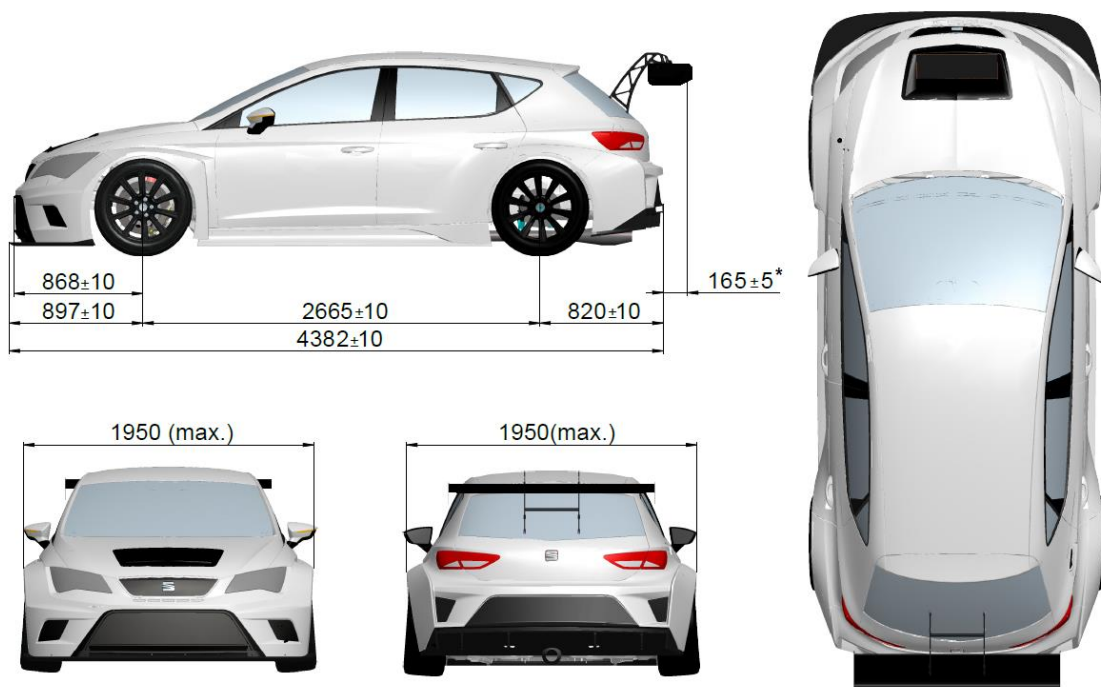
\ Roll bar Driver position.....	FIA Homologated and Hans adapted
\ Weight.....	1.120 kg
\ Front Width (max).....	1.950 mm
\ Rear Width (max).....	1.950 mm
\ Length.....	4.363 mm
\ Wheel base.....	2.666 mm

Car check-control

\ Acquisition system.....	AIM - MXG 28 channels + 8 analogics
\ Car check-control.....	Auto-diagnosis OBDII / DiagRA - LE
\ Airjack.....	Complete car kit

1.2 Dimensions and weights

Dimensions		
Overall length	4382 mm	
Overall bodywork front width	1950 mm	Measured on the mud-ward at the front axle
Overall bodywork rear width	1950 mm	Measured on the mud-ward at the rear axle
Wheel base	2665 mm	
Over hang front splitter	897 mm	
Over hang front bumper	868 mm	
Over hang rear	820 mm	
Over hang rear wing	165 mm	From the wing vertical to the bumper
Minimum ground clearance	free	70 mm is the performance recommendation



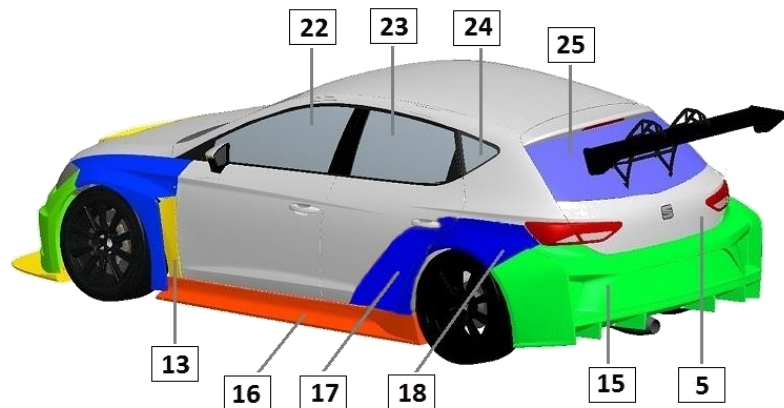
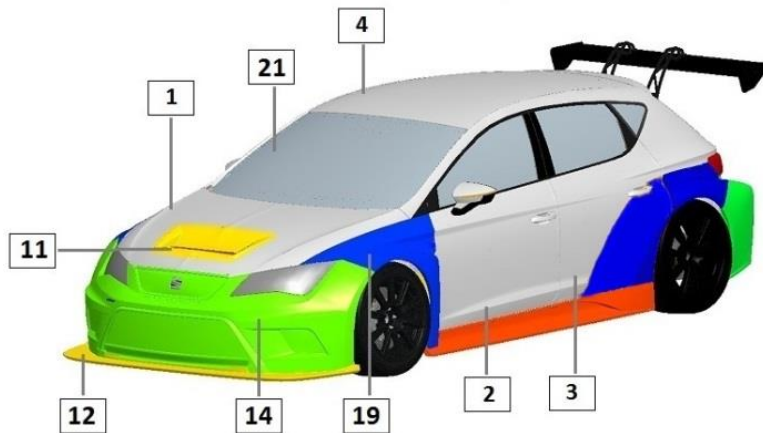
Weight:	
Total weight in race conditions without fuel	1150 Kg (1)
Car balance	63,2% front <> 36,8% rear
Distribution weight/power	3,48 Kg/cv

Note:

- (1) This value means the minimum weight on the "Technical Regulations" in race conditions.

1.3 Body shell

PART NUMBER	DESCRIPTION	MATERIAL
01	BONNET	STEEL
02	LEFT / RIGHT FRONT BONNET	STEEL
03	LEFT RIGHT REAR BONNET	STEEL
04	ROOF	STEEL
05	LUGGAGE COMPARTMENT COVER	STEEL
11	BONNET OPPENING	CARBON
12	FRONT SPLITTER	CARBON
13	FENDER AIR EXIT	CARBON
14	FRONT BUMPER	FIBER GLASS
15	REAT BUMPER	FIBER GLASS
16 (2014)	LEFT /RIGHT SILL TRIM PANEL	PLASTIC
16 (2015)	LEFT /RIGHT SILL TRIM PANEL	FIBER GLASS
17	LEFT / RIGHT REAR DOOR EXTENSION	CARBON (painted)
18	LEFT / RIGHT REAR FENDER EXTENSION	CARBON (painted)
19	LEFT / RIGHT FRONT FENDER	CARBON (painted)
21	WINDSCREEN	GLASS
22	LEFT / RIGHT FRONT DOOR WINDOW	GLASS
23	LEFT / RIGHT REAR DOOR WINDOW	GLASS
24	LEFT / RIGHT REAR TRIANGLE WINDOW	PLASTIC
25	REAR WINDOW	PLASTIC

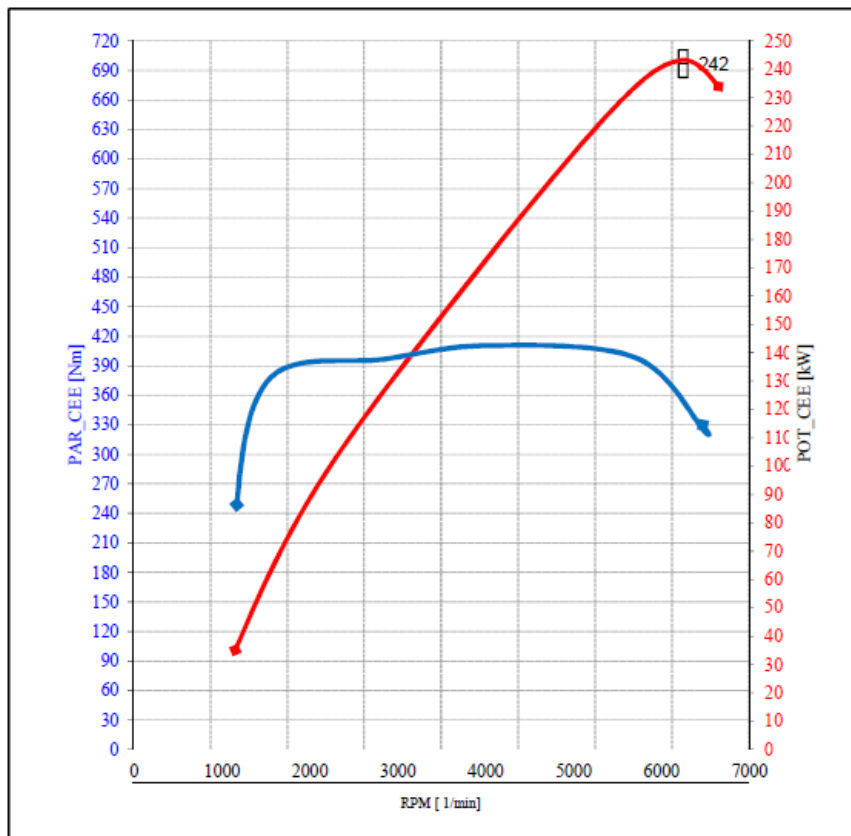


1.4 Powertrain

Engine

ENGINE FEATURES	
Type	2,0 TSI / Turbocharged & direct injection
Engine identification	CJX
Cylinder capacity	1984 cc
Corrected cylinder capacity	1984 x 1,7 = 3372,8
Maximum power	242 KW (330 Hp) at 6250rpm
Maximum torque (Nm/ rpm)	410 Nm at 4600 rpm
Max rpm	6800 rpm
Specific Power	165 CV/l
Electronic control unit	CONTINENTAL SIMOS 18.1
Fuel	RON MIN 98 , RON MAX 102
Fuel Consumption	0,37 to 0,42 l/km
Exhaust / dB	Racing Catalyst FIA Homologated / 104 dB
Distribution	Chain (sealed)
Oil system	Wet sump
Water pump	One electric water pump + two auxiliary pumps
Water thermostat	Double electronic thermostat
Fan range	Operating range 92°C to 87°C
Standard Fuel tank features	
Fuel tank type	Standard fuel tank from Quattro version
Capacity	55 lts Standard tank
Minimum fuel level before engine fault	> 5 lts.

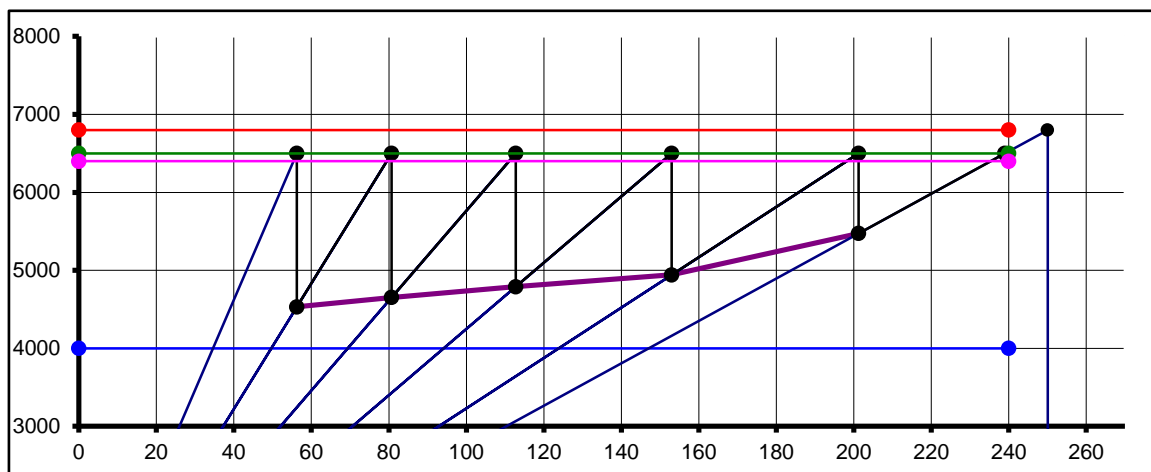
Engine power and torque curve:



Gear box & Slip diff.

Gear box features	
Transmission	Front wheel drive
Gear box	6 speed DSG (semi automatic gbx)
Differential	VAQ Electronic slip differential
Differential settings	3 Map available. Map swapping through the steering wheel module green button.
MAP 1	Base mode, No OverSlip, Only yaw damping in speeds above 110km/h. 300 Nm prelock during braking. Recommended use when grip is high. (new tyres or good grip)
MAP 2	Like map 1, less yaw damping, 200 Nm prelock during braking Recommended use when medium grip. (used tyres)
MAP 3	Prelock dependent from engine torque, 200 Nm prelock during braking(releasing earlier than 2) Recommended use when grip is low or rain
Clutch	Double multidisc clutch in oil bath
Gear box mode command	Electronic on the central gear lever
Gear shift	Paddles on the steering wheel
Gbx. Electronic Control Unit	Integrated mechatronic in oil bath
Cooling system	Exchanger oil - water
Launch control system	Activated
Down shift over rev protection	Activated / 1sec memory

Gear box Ratios								
GROUP 1-2-3-4	15	72	0,208		83	180	189	DIF Km/h
GROUP 5-6	20	72	0,278		RPM1	GEAR SHIFT	CUT	
FINAL RATIO	1	1	1,000					
GEAR	Prim Z1	Sec Z2	Gear Relation	Total Relation	3000	6500	6800	DIF RPM
1st	13	38	0,342	0,071	26	56	58	
2nd	22	45	0,489	0,102	37	80	83	1952
3rd	28	41	0,683	0,142	51	111	117	1847
4th	38	41	0,927	0,193	70	151	158	1711
5th	32	35	0,914	0,254	92	199	208	1558
6th	38	35	1,086	0,302	109	236	247	1026



Suspension

Features	Description	Remarks
Front damper ZF Sachs	2 way adjustable / Aluminium body	Click bmp10 / 20 Rebound
Springs Eibach front and rear	160/60/70 -80-90-100-110	Adjustable
Front Antiroll bar	22x2 // 22x3	Adjustable in 6 positions
Rear bumper ZF	1 way adjustable parallel / Aluminium body	Click 20
Rear Antirollbar	22 x3 // 22x4	

Brakes

Brake car features	Description	Remarks
Front caliper	AP 6P	Special: SEAT Sport
Front disc	362 x 32	Special: SEAT Sport
Front pump	AP 19,1 mm	
Front pads	Pagid 5F6	Thick: 25 mm
Rear caliper	AP 2P	
Rear disc	272x10	Solid
Rear pump	AP 22,2 mm	
Rear pads	Pagid 5F6	Orange
Rear press reducer	valve 25 bar	(nominal)
Brake balance	Mechanical	

1.5 Rim & Tire

Tyre information	
Rim dimension	10"x 18" ET 36
Rim centre lock	5 studs x 112 mm
Maximum tyre dimension recommended	270/660 R18
Tyre temp difference inside / outside	20°C
Minimum cold pressure recommended	1.4 bar

1.6 Electronic units

Electronic MODULES	Remarks	Software	Place
ECU	Continental	Motorsport	Engine bay
Mechatronic	VW	Motorsport	Inside gear box
Electronic slip differential	BorgWarner	Motorsport	FDX (external)
Low fuel pump control	PWM control module	Series	Fuel tank (external)
Electronic Steering rack	VW	Motorsport	Front subframe
ESP unit	Continental	No active	Cockpit
Gateway	VW	Series adapted	Cockpit
Black box	Audi	Motorsport	Cockpit
MXG display / logger	AIM	Motorsport	Cockpit
Fuse box	SEAT Sport	Motorsport	Cockpit
Steering Driver module	SEAT Sport	Motorsport	Cockpit
Transponder	XXX		Engine bay

Modules information

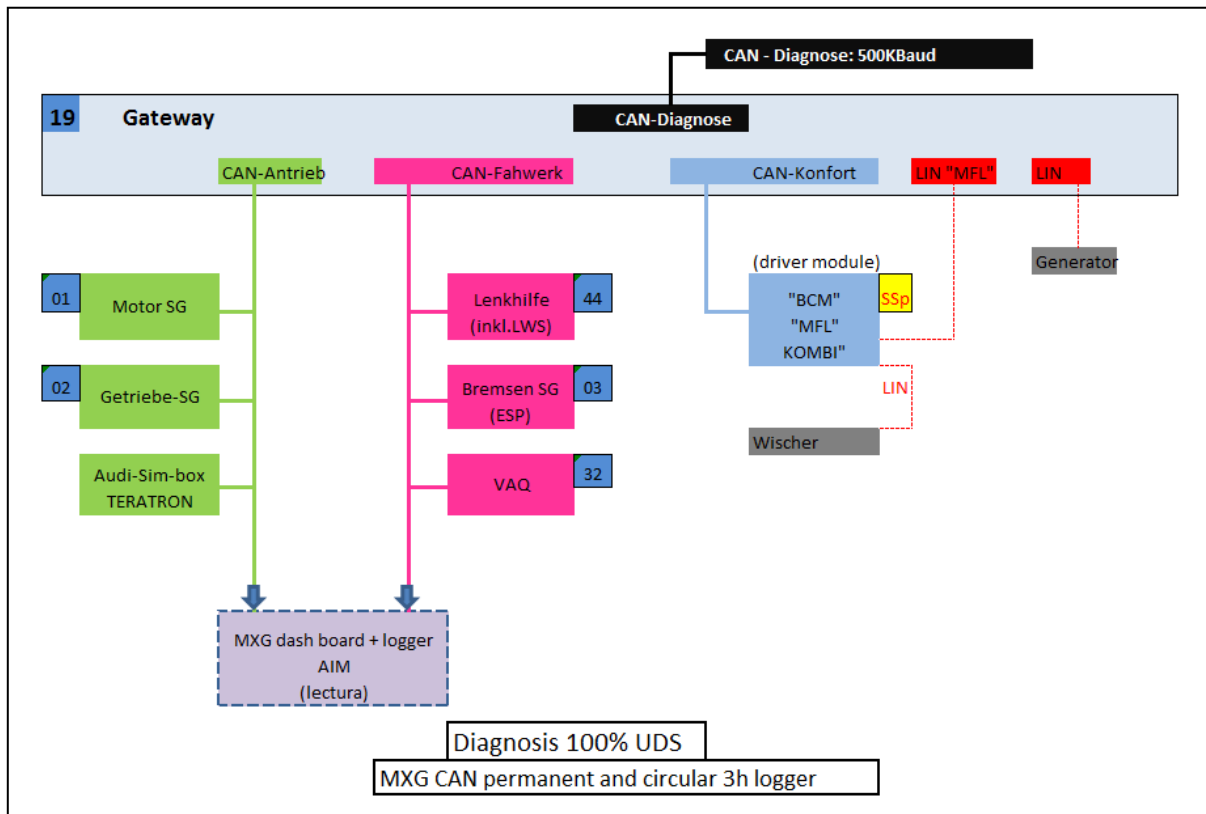
MODULES BASED IN SERIES							
	Engine	Mechatronic	Elec. Slip diff.	Low fuel pump	Steering rack	ESP	Gateway
Specific software/ mapping:	Yes	Yes	Yes	No	Yes	No	Yes
Specific codifications:	Yes	Yes	Yes	No	Yes	yes	yes
Interchangeable between cars:	Yes	No	No	Yes	Yes	Yes	Yes
Spare part ready for plug and play:	Yes	No	Yes	Yes	Yes	Yes	Yes
*UDS diagnosis (VW diagnosis):	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Modification allowed:	No	No	No	No	No	No	No

Notes:

- Use always spare parts from SEAT Sport. Although the mentioned parts are derived from series cars, the software and codifications are different and modified for SEAT Sport.
- OBD: All series modules used on the SEAT Leon Cup Racer are based in the MQB platform. Through the diagnostic tool available on the VW Group dealers, it is possible to diagnostic any malfunction.

Architecture Leon Cup Racer:

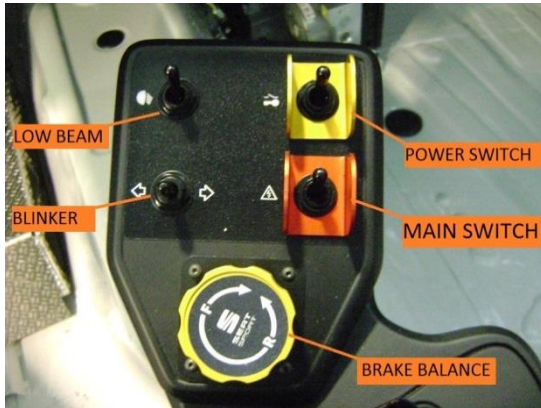
All electronic modules are connected by CAN Bus and LIN_Bus. Following the LCR CAN scheme view:



2 DRIVERS CONTROL

In this section is explained how the driver can handle the Leon Cup Racer commands and functions.

2.1 Main console



Main switch: Active the battery supply.

Ignition switch: Active the power to all devices.

Low beam: Active the low beam light. High beam and flash activation buttons are placed on the steering wheel module.

Turn light: Active the left and right turn lights. No automatic return.

Brake balance: Turning the balance wheel you can balance the brake pressure from front to back or vice versa.

Do not press the brake pedal while moving the balance wheel.

Through the driver display you can check the front and rear brake pressure and the balance in percentage.

Notes:

- To start the engine, always proceed with this order: Main switch and later power supply. To stop the engine proceeds backwards.






2.2 Steering wheel module










The electronic steering wheel module permits to activate different functions without living hands from the steering wheel.

Some buttons has double functionily



Steering wheel functions:

Nº	Function	Conditions / Remarks
1	 Starter	Active in gear lever in "P" or "N" Active if rpm < 500
	 Speed limiter	Pressing the button constantly limit 60 km/h
2	 Diff map change 3 maps	Short push to increase differential map number The diff map scrolls rotatory with 3 maps Diff map number is showed on the display screen "driver 1" Map 1: Us when grip is high. (new tyres or good grip) Map 2: Use when medium grip. (used tyres) Map 3: Use when grip is low or rain
	 Traction control active/deactivate	ONLY WHITH ABS UNIT ACTIVE Pressing the button 3 seconds the TCS can be deactivated.
3	 Safety brake signal button	"Brake signal can be activate with this button in case of brake switch failure"


		Possible move the gear lever without push the brake pedal IMPORTANT: the use of this security button it's under the user responsibility.
4	 Radio	Driver voice activation Maintain pushed to talk
5	 Rain lights	Short push to toggle on/off
6	 Driver fan	Toogle to activate
7	 Change display	Press to change the display pages / rolling change
8	 High beam	Short push to flash Long push to toggle on/off
9	 Wiper	Toggle to activate.
10	 Windscreen water	Push to activate water splash + wiper activation
11	 Drink	Activates water pump Note: Pump not supplied by SSp
-- +	Tip up // Tip down	Orange led informs when tip up or down signal has been activated
	CAN info	Usual status: LED off LED on when there is a problem of CAN Bus communication

Notes:

- Although it is possible uncouple completely the steering wheel from the column with the engine running, is not advisable. (Cause fault messages on the OBD).
- Be careful with the "Safety brake signal button". This button permits put in Neutral the gear lever although the brake pedal is not pressed. Take care and advise the people around the car because wheels may move.
-

2.3 Gear lever functions

The shifting gear lever enables the different gear box modes. The features for each mode are:

Gear lever	Mode	Remarks
		
P	Parking mode	Use to lock the car. (Safety for team staff when car is stopped)
R	Reverse	<i>(not allowed on the pits zone)</i>
N	Neutral	No gear engaged. Traction is free.
D/S	Automatic mode	D= Automatic Drive S= Automatic Sport Drive
Tip +/- (TS)	Manual shifting	Shifting through the wheel paddles

“P” parking mode:

Use parking mode to lock the transmission through a mechanical cable. Use only this position when you want to block the car.

- It's only possible to lock or unlock the parking mode if the car is completely stopped and the brake pedal is pressed.
- **IMPORTANT: Never try to put the gear lever in “P” if the car is not completely stopped. If this happens the gear box might be seriously damaged.**
- If for any reason it is not possible to move the lever from “P” position although you are pressing the brake pedal, through the safety grey button “sign (P)” on the steering wheel module it is possible to unlock the gear lever command.

“R” reverse mode:

- It's only possible to put on and take out the “R” (reverse) mode if the car is completely stopped and the brake pedal is pressed.

“N” neutral mode:

- In “N” mode, it is possible to move the car pushing externally (pit lane use).

“D” automatic mode:

- Not advisable for race. “D” mode is only advisable to move the car on the paddock zone. The gear shifting is working in a low range of engine speed.

“S” automatic mode:

- Pushing the gear lever backward one time when the lever is in “D” the **“S” mode will be engaged**. Driver display will show now “S”. (left up corner)
- Use “S” mode to drive in automatic shifting. Simultaneously it is possible to use the steering paddles.
- It's possible to use “S” mode in the launching system. The gear will shift up automatically. The driver can pass to Tip mode in any moment.
- It's possible to pass from “D” or “S” to Tip and backwards always and in any moment.

“Tip” manual mode: “TS” (the most advisable for motorsport)

- From the “S” gear lever position move the gear lever to the right side. Driver display will show **“TS” mode**.
- Use “TS” mode for drive in manual mode, handling the shifting by the steering paddles.
- “TS” the shifting is manual. When the engine will reach rpm limit the power will limit (6800 rpm).
- Downshift is protected preventing the engine rpm overriding. Shift demand will be active for one second.

2.4 Car launching systems

There are two car launching systems for the standing starts, manual or automatic launch system.

“LCS” LAUNCH CONTROL SYSTEM -AUTOMATIC-

LCS allows you to perform a semiautomatic car launching. This system is automatically activated if the wheels are absolutely stopped and the brake pedal is pressed.

Launching time after brake signal pedal off:

Process:

1. After the grid formation lap, stop completely the car on the grid line pushing the brake pedal.
2. Gear lever has to be in “S” or “TS” mode. If this mode was already in during formation lap, will not be necessary move the gear lever.
3. Push foot throttle flat out. Engine will limit at ± 4200 rpm.
4. Release the brake pedal and car will be launched. Driver has to control the wheel spin with the gas pedal.

Summarizing: Arriving from the formation lap driving in “S” or “TS” stops the car on the grid line pressing the brake pedal. Push the foot throttle flat out (4200rpm) and release the brake when you decide. **(max time flat out 6 sec)**
Control the wheel spin and enjoy.

Notes:

- Starting in “S” is necessary to release a little bit the gas pedal from the full gas to disable the launch system. After this, using the “S” mode, up shift is automatic.
- Is possible to use the Launch Control System controlling the rpm. Advisable no below of 3500 rpm.
- The system need brake press **>10 bar**. Push the brake pedal clearly.
- With start lights in red: If you release just a little bit the brake pedal in any moment of the system process will understand that launch is done and the clutch will load irreversibly.

MANUAL LAUCH SYSTEM

It's possible to carry out a manual launching with the same success.

Process:

1. After the grid formation lap, stop completely the car on the grid line.
2. Push the brake pedal (Brake press **>25 bar**)
3. Gear lever has to be in “S” or “TS” mode. If this mode was already in, it's not necessary move the gear lever.
4. Release the brake pedal while you press down the gas pedal.

Notes:

- It's also possible to while you are braking put the engine in charge accelerating a little bit. **Take care the time you apply the engine charge because the clutch takes temperature very fast and after a certain limit the clutch launch is coming slow. Recommendation not more than 3 seconds.**

2.5 Speed limiter system

The speed limiter system allows limiting the car speed. This system is recommended for the pit lane area. Speed limiter limitation is 60Km/h (tolerance - 2 km/h GPS speed)

Process:

1. Brake to reduce the car speed around 60 km/h or little less.
2. Release the brake and press the steering wheel red button as long as you want it acts.
3. Push the gas pedal fully. Car speed has to be limited.

Notes:

- Can be applied in different gears. Recommended 3rd or 4th gear.
- Is not recommended to activate it in the track, when safety car or others.

2.6 Driver has to consider

- Learn and memorize the steering wheel buttons place and functions will allow drivers a more fast action and will help to not lose the track reference point.
- Warm up the engine before starting. The minimum water temperature before to load the engine is 80°C.
- Check the brake pedal is hard when car is standing and on the acceleration way.
- Warm up the tires before attacking. Without blankets use, the rear tires takes 2 laps to warm and this car is very sensitive on that.
- Shift up the gear when shift light indicates. With 410 Nm 2WD front its recommend shift around 6300 rpm.
- Shift down gears without stress. Automatic gearbox needs reduce engine rpm to permit the next shifting down. Do not shift down 3 times consecutively if the previous gear was not engaged. (memory active for 1 sec).
- Last lap: Cool down brakes and engine water to avoid the engine and discs thermal shock.
- Display alarms: There are three different possibilities to show alarms, 1) LEDs lateral, 2) red ribbon bellow screen 3) completely screen pop up message. Stops the engine if “pop up” message appears. (Oil or water). Speaks with your engineer about the alarms configuration.
- If for any reason you have to drop out the car on the track put the gear lever in “N” Neutral to save the transmission in case of being towed.

DISCS BEDDING PROCEDURE

To get the maximum life please follow the instructions below:

- Where possible bed discs with used pads.
- To reduce thermal shock during bedding the brake ducts may be 50% taped off.
- Apply the brakes gently at low speed a few times to ensure correct installation.
- Apply the brakes moderately, (progressively up to 50% race speed, 25% race pressure), for 10-20 applications to ensure above 80% pad face contact with disc. (The contact with the disc face is particularly important at the inner swept area. The first time a driver gets used to bedding discs on a car it is worthwhile getting him to return to the pits to check contact is sufficient before preceding to the next step).
- Progressively build up to about 70% of race speed and 50% of race pressure, then apply brakes for approximately 25 applications.
- Perform one lap cooling down before returning to the pits.
- The orange temperature paint should be turned on the surface and the green 75% of the way through the disc thickness at which point any tape can be removed. On returning to the track progressively come up to race speed and pressure.

3 DISPLAY & FUSE BOX

MXG is the new AiM dash-logger designed to acquire and display data coming from your ECU, the internal accelerometer and gyro, as well as from the GPS module, analog/digital inputs and predefined math channels.

Performance and data acquired can also be incremented adding expansion modules.

It's possible to scroll the pages through the steering wheel module black button (7).

To enable "the lap time" is necessary to insert the track where you are running. Track load has to be done by the program GPS Manager available at the sw RaceStudio3.

SmartyCam: The on-board cameras that overlays on videos the data sampled by your logger.

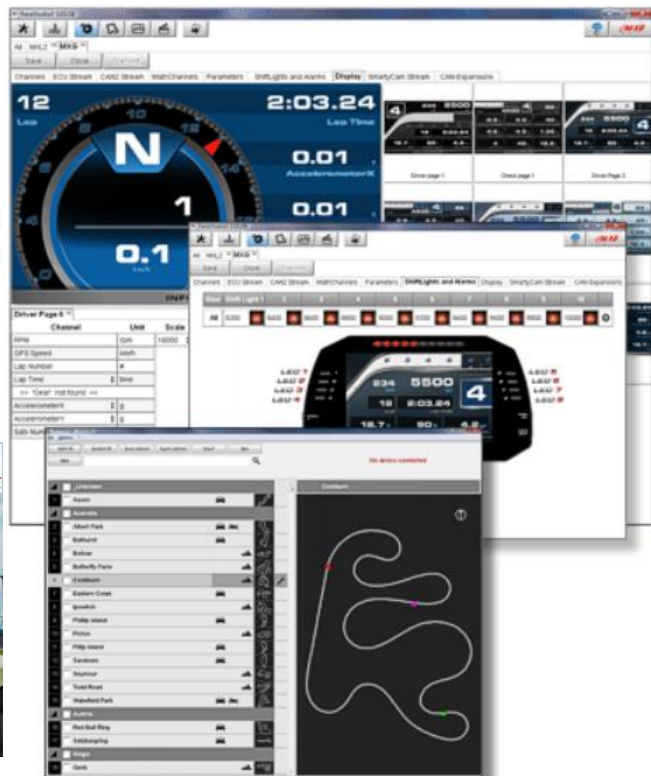


Software RaceStudio3, Firmware MXG and documentation available on the AIM web site:

<http://www.aim-sportline.com/eng/download/index.htm>

Display logger user guide available on the AIM web site:

http://www.aim-sportline.com/download/doc/eng/mxs-mxg/MXG_user_guide_101.pdf



3.1 Display alarms and shift lights

Eight configurable RGB alarm LEDs, combined with lower red bar alarm and Red Pop Up alarm. Select solid alarm or flashing one – and the flashing frequency, choose to have an accompanying text message and set the alarm priorities.

Alarms and shift lights

1

MXG features 10 RGB gear flash LEDs that can be freely configured in a very flexible way. For every LED, you can define the RPM

value at which to turn it on and the colour. You can also define different RPM values per every gear number.



2

MXG also has 8 different alarm LEDs that you can configure in order to turn them on or off depending on the value of the analog or digital inputs, ECU values, expansion values, GPS information or math channels.

You can configure them in order to turn them off when the condition disappears, when you push a pushbutton, when the test is finished or when the data are downloaded after the test.

You can associate an alarm LED, a message and a digital output with every event.

Please, read section 10.1.4 in order to see how to manage gear flashes and alarm LEDs.

 **IMPORTANT:** the change of the alarms or shift lights is under user responsibility.

3.2 Data acquisition analysis

MXG logger **data acquisition** channels information:

CHANNEL NAME	DATA ACQ NAME	UNIT	SCALE
P_turbo	P_TURBO	Pressure (bar)	1...2.21
T_air	T_ENG_AIR	Temperature (°C)	
T_oil	T_ENG_OIL	Temperature (°C)	
T_water	T_ENG_WATER	Temperature (°C)	
T_extern	T_AIR	Temperature (°C)	
RPM	RPM_ENG	rpm	760...6800
Brake	FLAG_BRAKE	on/off	0 / 1 (1= braking)
ANA1	P_BRK_FRONT	Pressure (bar)	0...140
ANA2	P_BRK_REAR	Pressure (bar)	0...140
ANA5	P_ENG_OIL	Pressure (bar)	1.5... 4
ANA6	P_ENG_FUEL	Pressure (bar)	2... 7
ANA7	FUEL_LEVEL	Amount (litres)	0... 55
Pedal	POS_PEDAL	Load (%)	0...100
Gear_Lever	POS_GBX_LEVER	number	0=Init, 5=D, 6=N, 7=R, 8=P, 10=Tip+, 11=Tip-, 12=S, 14=Tip Pos., 15=Failure
DSG Mode	POS_GBX	number	0=Init, 5=P, 6=R, 7=N, 8=D, 9=S, 13=TD, 14=TS, 15=Failure
Gear	GEAR	number	0=N, 1=1 ^a , 2=2 ^o , 3=3 ^o , 4=4 ^o , 5=5 ^o , 6=6 ^o , 9=P, 10=S, 11=D/E, 12=Intermediate, 13=Rev, 14=undefined, 15=failure
Tip Down	TIP_DOWN	sign	1=Tip Down
Tip Up	TIP_UP	sign	1=Tip Up
Diff Map	POS_DIF_MAP	number	1 - 2 - 3
Gearbox temp.	T_GBX_OIL	Temperature (°C)	10...138
Y_Acc	G_CH_Y	acceleration (g)	-1,27...1,27g
X_Acc	G_CH_X	acceleration (g)	-1,27...1,27g
YawRate	W_CH	Angular speed (°/s)	0..163,82 Rad/s
Speed_RL	V_WHL_RL	Velocity (kph)	0...250
Speed_RR	V_WHL_RR	Velocity (kph)	0...250
Speed_FL	V_WHL_FL	Velocity (kph)	0...250
Speed_FR	V_WHL_FR	Velocity (kph)	0...250
Steering Angle	A_STE	Angle (°)	0...800°
FuseState5	FLAG_FBX_F5	number	0... 8
FuseState4	FLAG_FBX_F4	number	0... 8
FuseState3	FLAG_FBX_F3	number	0... 8
FuseState2	FLAG_FBX_F2	number	0... 8
FuseState1	FLAG_FBX_F1	number	0...8
Battery Voltage		mV	0 – 14.700 mV

Form AIM "GPS"	Unit	
GPS_Speed	kph	
GPS_Nsat	**	Nº of satellites on
GPS_LatACC	g	
GPS_LonACC	g	
GPS_Slope	deg	
GPS_Heading	deg	
GPS_Gyro	deg/s	
GPS_Altitude	m	

Following, there are shown the standard approximate values at 20°C air temperature.

Channel measures	Idle speed	Std use values at Tair 20°C	Maximum value
P_TURBO	1 bar	2.35 bar **	>2.36bar
P_ENG_FUEL	4.8 bar	5.8 bar	7 bar
P_ENG_OIL	1.5 bar	4 bar	5 bar
T_ENG_AIR	<	42°C	>75°C
T_ENG_OIL	<	122°C	>147°C
T_ENG_WATER	<	95°C	>120°C
T_GBX_OIL	<	114°C	>138°C

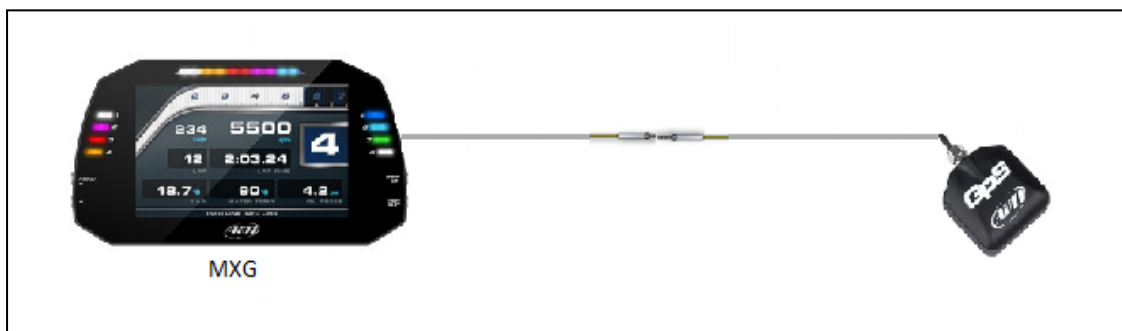
Notes:

- The "maximum value" underlined in orange shows the value before performance restrictions or protection.
- ** boost. The boost pressure has not changed between cars 2014 and 2015. The diagnosis value showed in cars 2014 was limited at 2.2. Cars 2015 will show the direct value.

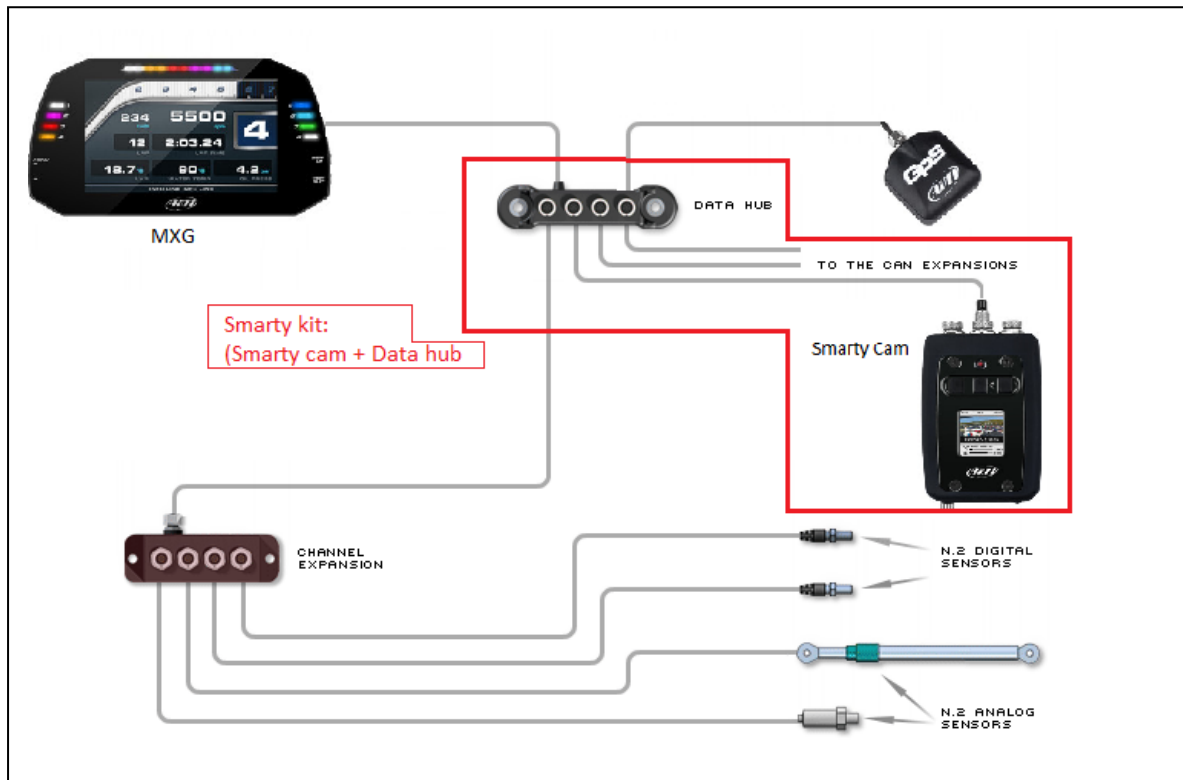
3.3 MXG channel expansion scheme

MXG logger data expansion channels:

Scheme 1: Data logger standard connection scheme (car delivery).



Scheme 2: Data logger connection scheme with Smarty cam and expansion module.



Features	Remarks
BEACON	The MXG system use Only GPS signal.
Circuit config.	<ul style="list-style-type: none"> ➤ Through the "RaceStudio3" with/or "Track Manager" programs it's possible to activate all circuits in the world. ➤ There is possible to create your own circuit with the program.
Extra sensors*	<ul style="list-style-type: none"> ➤ In case you want to add extra sensors, you have to connect them to an "Expansion module" as shown in the scheme "2" ➤ Any extra sensor have to be connected through the AIM DATA HUB + CHANNEL EXPANSION (scheme 2),

Notes:

- For the SEAT Leon Eurocup participants: Any extra sensor have to be connected through AIM system
- Channel expansion module and sensors only available through AIM dealers.
- **IMPORTANT:** If for any reason it's necessary to send data acquisition files to SSp, you have to send the forth data files extensions: .drk, .bak, .gpk,.rrk, .xrk

3.4 Fusebox

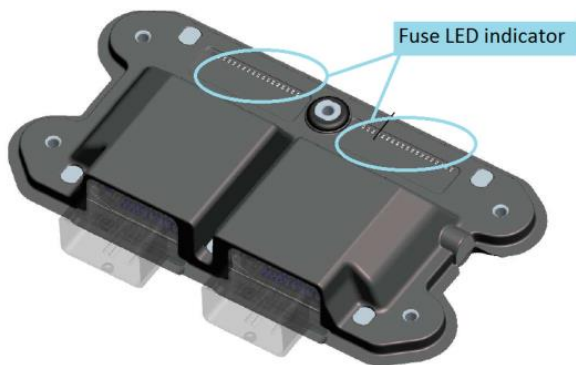
The Leon Cup Racer fusebox it's an electronic box that control the power supply to practically all devices. Internally the fuses are resettable automatically, so never is necessary to change a fuse. In case of malfunction has to be send to SEAT Sport.

Through the fuse box there is also possible to check the fuses activation, so you will know if the current or signal was sent.

To check the proper functioning exists three ways:

- Through the RaceStudio3 in live view
- Through the RaceAnalysis channel analysis
- With the red LEDs on the fuse box.

In case to find a malfunction it's necessary to control the corresponding wiring or device.



Fuse box LED table

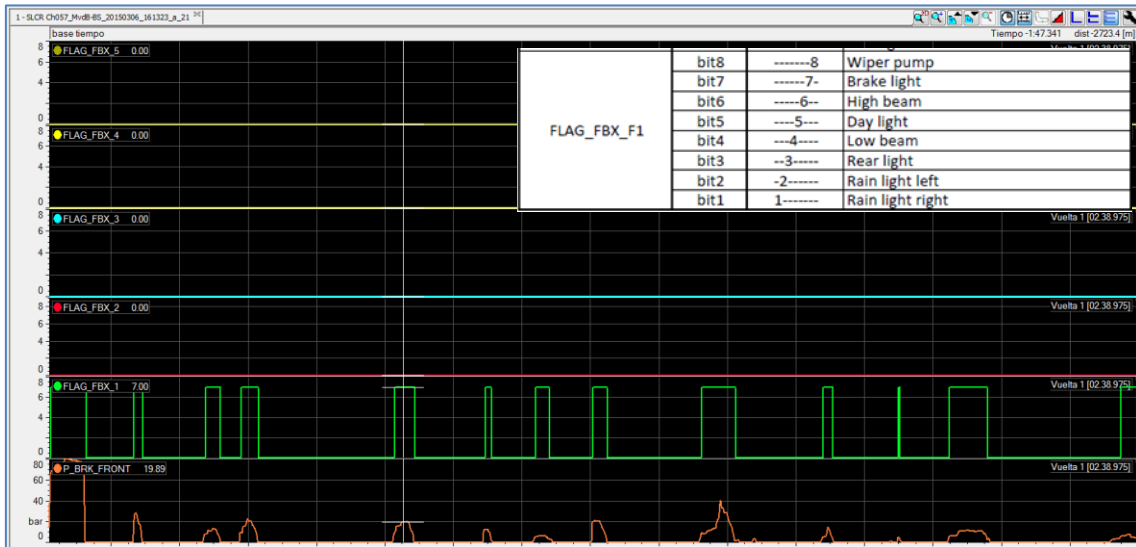
● Lbda
● Eng. Acc.
● Injectors
● Ign Coils
● Gbox Elv
● Gbox Pump
● Eng. ECU
● Fuel P.
● Starter
● Radio
● Drink
● Aux
● St Wheel
● GB/Lever
● Diag.
● PW Steer.
● Eng. Ecu
● Front Fan
● MXG
● BB/GW
● Aux +15
● Ckpit Fan
● Window
● Free
● VAO
● Aux +30
● DSG
● Elv ABS
● Wiper
● Transp.
● Sig. +15
● Wiper P
● Brake
● High Beam
● Day Light
● Low Beam
● Rear
● Rain L
● Rain R

On the following table is shown the fuse analysis information:

- Channel name: There are 5 channels for analysis
- Bite number: Each flag channel controls 8 fuses.
- Data value: Is the value you can check on the data acquisition.

Channel name	bit number	Data value	Description
FLAG_FBX_F5	bit8	-----8	Sadev pump
	bit7	-----7-	HR-ECU
	bit6	----6--	HR-Fuel pump
	bit5	---5---	Starter
	bit4	---4----	Radio
	bit3	--3----	HR-Lambda
	bit2	-2-----	HR-Miscellaneous
	bit1	1-----	HR-Injectors
FLAG_FBX_F4	bit8	-----8	MR-ignition coils
	bit7	-----7-	Sadev-ELV
	bit6	----6--	Drink
	bit5	---5---	Switch Panel / Aux. Data connector
	bit4	---4----	Steering Wheel
	bit3	--3----	Gear Lever / GCU
	bit2	-2-----	Diagnosis Connector
	bit1	1-----	Power steering ECU
FLAG_FBX_F3	bit8	-----8	ECU
	bit7	-----7-	Front Fan
	bit6	----6--	MXG
	bit5	---5---	BlackBox / Gateway
	bit4	--4----	Differential
	bit3	--3----	+30 Aux. connector
	bit2	-2-----	DSG
	bit1	1-----	ABS ELV
FLAG_FBX_F2	bit8	-----8	Wiper
	bit7	-----7-	Turn light
	bit6	----6--	Diagnosis Connector / +15 Aux con.
	bit5	---5---	Cockpit fan
	bit4	---4----	Window
	bit3	--3----	not used
	bit2	-2-----	Transponder
	bit1	1-----	+15 signal
FLAG_FBX_F1	bit8	-----8	Wiper pump
	bit7	-----7-	Brake light
	bit6	----6--	High beam
	bit5	---5---	Day light
	bit4	---4----	Low beam
	bit3	--3----	Rear light
	bit2	-2-----	Rain light left
	bit1	1-----	Rain light right

Example: In the acquisition screenshot below, it's shown the channel "flag_FBX_1" in green the value is "7" when braking and 0 when no braking. On this case the information is that there is a problem on the brake light line.



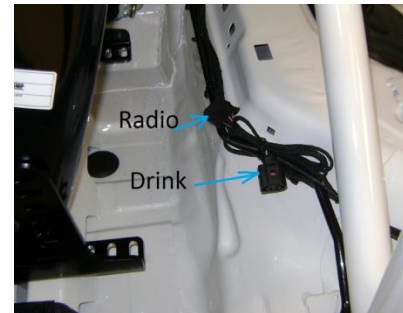
3.5 Auxiliary connectors

The main car wiring loom is prepared with some auxiliary connector to make easy the auxiliary devices connections.

RADIO AND DRINK:

Behind the driver seat there are two free connectors in association with the steering wheel module, (Radio and drink). Connect here your radio and your drink system and through the steering wheel module can manage both.

Radio connector		
Main loom reference connector:		4D0 972 704
Matching connector:		1J0 972 714
Pin out		Terminal
1	+30 up to 8A	FS 2,8 x 0,8 (*)
2	GND	FS 2,8 x 0,8 (*)
3	PTT	FS 2,8 x 0,8 (*)
4	PTT	FS 2,8 x 0,8 (*)



Drink connector		
Matching connector:		1J0 973 822
Pin out		Terminal
1	up to 2.5A	
2	GND	

FUEL CONSUMPTION DISPLAY AND TCR SCRUTINEERIG EVO4 LOGGER:

This connector is placed in the driver cockpit above the central tunnel (front). Also could be used for other requirement.

Auxiliary power supply		
Matching connector:		191 972 733
Pin out		Terminal
1	+30 up to 3A	FS 2,8 x 0,8 (*)
2	GND	FS 2,8 x 0,8 (*)
3	CAN H traction	FS 2,8 x 0,8 (*)
4	CAN L traction	FS 2,8 x 0,8 (*)
5	CAN H chassis	FS 2,8 x 0,8 (*)
6	CAN L chassis	FS 2,8 x 0,8 (*)

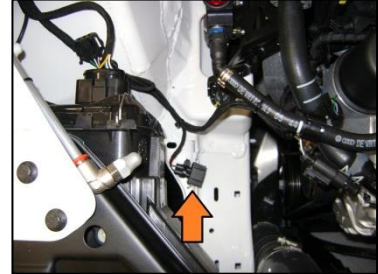


Transponder: This auxiliary connector it is placed beside to the right front headlight.

- All SEAT Leon Cup cars bought to participate on the SEAT Leon Eurocup will be provided with the transponder mounted.
- The cars bought for other championships will be provided without transponder.

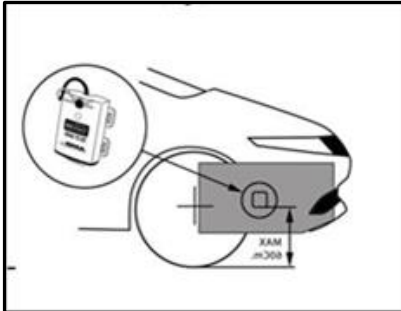
SEAT EURO CUP TRASPONDER

Transponder	Remarks
Availability	All Eurocup participants have installed // rest: purchase order
Type	Radio frequency
Energy	Connected to the car 12v (with fuse)
Position	See drawing // right side // body shell support ready.



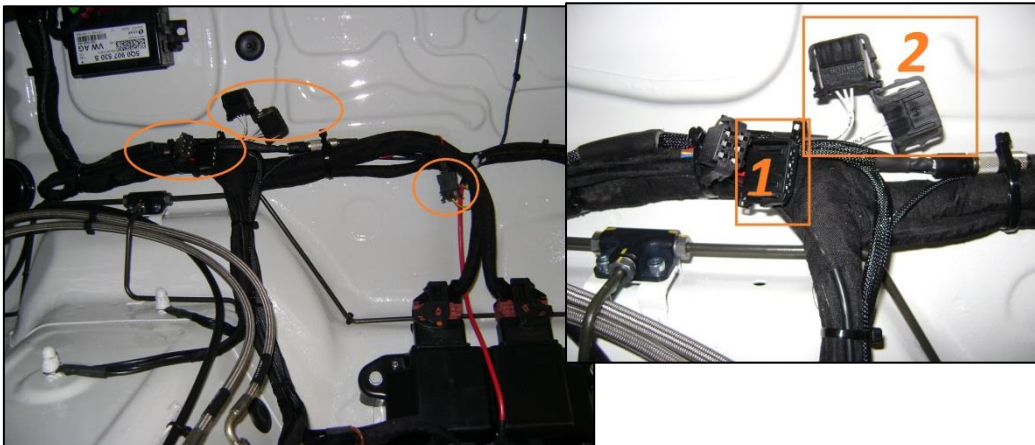
Transponder	
Matching connector:	
357 972 762	
Pin out	Terminal
1	12v
2	GND
	FS 2,8 x 0,8 (*)
	FS 2,8 x 0,8 (*)

Transponder for SEAT Leon Eurocup.



Auxiliary service connectors: Auxiliary free.

They are placed on the cockpit bay, in the middle of the tunnel.



N°1, auxiliary power supply: (+15. +30. GND x2). (see picture, part n°1)

Additional power supply		
Main loom reference connector:		4D0 972 704
Matching connector:		1J0 972 714
Pin out		Terminal
1	+30 up to 8A	FS 2,8 x 0,8 (*)
2	+15 up to 5A	FS 2,8 x 0,8 (*)
3	GND	FS 2,8 x 0,8 (*)
4	GND	FS 2,8 x 0,8 (*)

N°2, auxiliary analogic sensor: Connected to the dash logger. 2 connectors available, (see picture)

Auxiliary power supply		
Matching connector:		191 972 713
Pin out		Terminal
1	5v	FS 2,8 x 0,8 (*)
2	signal	FS 2,8 x 0,8 (*)
3	GND	FS 2,8 x 0,8 (*)

Power supply cut:

There is a connector that active the power supply to the fuse box, so in case of disconnection cuts all devises power supply.

You can unplug it in case of transport or a most safety disconnection in case of workshop big jobs.


See connector place close to the fuse box main connectors on the picture beside.



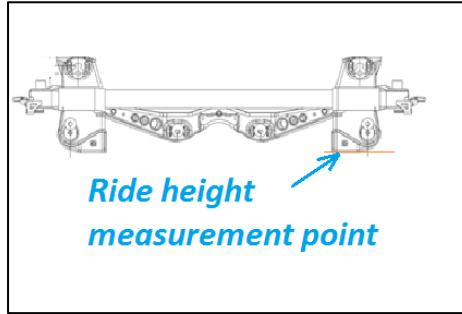
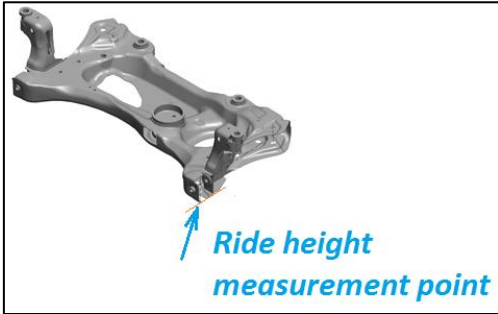
4 SETTING ADJUSTMENTS

4.1 Delivery car set-up

LEON CUP RACER		PRODUCTION SET UP		SEAT SPORT	
CAR INFORMATION		KMS	TRACK INFORMATION		DATE 20/01/2015
Chassis			Circuit		FROM
Engine			Lenght		TO
Gearbox			Driver		
CAR CONFIGURATION		FRONT	REAR		POWER TRAIN
RIDE HEIGHT	75		115		ENGINE
Measure point	lowes poin front subf.		lowest point rear subf.		RPM MAX 6600 Refect
DAMPER SETTINGS	FRONT	REAR		HP LCR 314	
MAIN SPRING	160/60/110	160/60/90		TRANSMISSION	
TENDER	60/60/2	60/60/2		Gear Ratio Vmax	
ASSEMBLY LENGHT	188	206		1 13//38 0,071 55,68	
BUMP STOP	25mm_D40	30mm_45		2 22//45 0,102 79,57	
BUMP SPACER	<<	<<		3 28//41 0,142 111,16	
BUMP	5 (5 - 10)			4 38//41 0,193 150,86	
REBOUND	10 (0 - 20)	Sachs 10 (0 .20)		5 32//35 0,254 198,42	
ARB SETTINGS	FRONT	REAR		6 38//35 0,302 235,62	
TYPE	22X3	22x3		cwp 1-4 15//72	
POSITION	M - M	M - M		cwp 5-6 20//72	
WHEELS SETTINGS	FRONT	REAR		DIFFERENTIAL	
RIM	Fond 18x10J_ET36	Fond 18x10J_ET36		VALVE 65	
SPACER	0	0			
SSp delivery Tire	N2801 250/660R18 A006	N2801 250/660R18 A006			
COLD TYRE PRESSURE	2,5 bar	2,5 bar			
BRAKES SETTINGS	FRONT	REAR			
MASTER CYLINDER	AP 19,1	AP 22,2			
BRAKE PADS	PAGID	PAGID			
BRAKE DISCS	AP 362x32 (11P)	VAG 272x10			
PRESS RELATION	15/12	25 bars limit out			
AERO					
WING POSITION	0				
ALIGNEMENT	FRONT				WEIGHT (KG)
	LEFT	RIGHT		DRIVER 75	
CAMBER	5°	5°		FUEL 20	
TOE std.Ride height	1.0 mm OUT	1.0 mm OUT		FRONT TOTAL	
				LEFT RIGHT 1245	
				REAR	
				FRONT CROSS	
				REAR LEFT	
NOTES					
Alignement with 75kg + 20kg of ballast.					

 Due the production issues, small changes on this set up sheet can be done. Do your own check.

Front and Rear set up ride height measurement points:



4.2 Steering rack centering

The steering rack is electric and steering angle sensor has to be electronically aligned with the wheels on the main time.

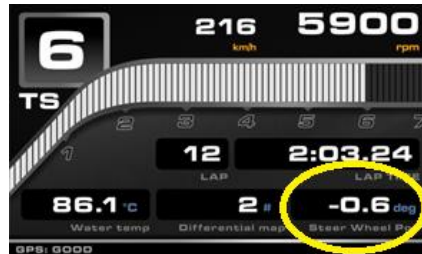
How to proceed align the steering angle sensor:


It is necessary **fix the steering wheel**. To do it, you can use straps fixed on the top of the roll cage or other kind of std. tools. The most useful is two straps going through the steering wheel and the roll cage.

The use of a rack centring stopper tool is not recommended because is difficult to get the steering angle sensor at "0 deg". The most important is to obtain the toe alignment with the sensor at "0 deg".

Proceed as following:

- Switch on main and ignition switches.
- Turn left and right to get the steer angle signal.
- Fix the steering wheel with straps when the steer angle is "0 deg"
- Switch off the ignition and main.
- You can now proceed to the alignment jobs.



 With this process the steering angle signal will be at 0 deg, with the wheels aligned. This fact is very important for the steering assistance and for the electronic slip differential behaviour.

4.3 Suspension adjustments

	Front	Rear
Wheel ratio	1mm wheel / 0,9mm damper	1:1
Damper travel	115mm	118mm

4.4 Front Camber and Toe adjustment

How to proceed to adjust camber and toe.



The front suspension is very special on this car due the kinematic characteristics. To reach the front suspension set up value is recommended to proceed as following:

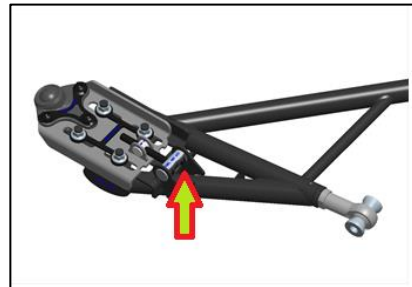
1. **Car ride height.** Put the ride height at your choice trough spring adjustment.
2. **Camber.** To change the camber is recommended to change through moving the steering rack arm first. The camber will change quickly.
3. **Toe.** To change the toe enlarge or reduce the wishbone adjustment.
4. Check and adjust a second time if necessary

 **Although this process information seams estrange, is the best and fast way to obtain the camber and toe adjustment.**

Front Wishbone adjustment:

Underneath of the front wishbone there is a bolt to control the adjustment movement. Unblock the four screws that are fixing the camber regulator plate and proceed at the camber adjustment.

-  After any intervention, fix the wishbone regulator plate bolts in the right tighten.
-  Maintain the wishbone regulation plate clean and little oiled between plates.



Front regulation table. (the values shown are approximate)



Camber	Toe regulation	Wishbone regulation 1,5 turns = 10° camber
-6	10,5 Turns	13 Turns
-5,5	7 Turns	8,3 Turns
-5	3,5 Turns	4,5 Turns
-4,5	0	0
-4	-3,5 Turns	-4 Turns
-3,5	-6,5 Turns	-8 Turns
3	-10 Turns	-12,5 Turns

4.5 Rear Camber and Toe adjustment

How to proceed to adjust camber and toe.

1. **Car ride height.** Put the ride height at your choice trough springs adjustment.
2. **Camber.** To change the camber is recommended to change through moving the “boomerang” arm.
3. **Toe.** To change the toe enlarge or reduce the rear arm.
4. Check and adjust a second time if necessary



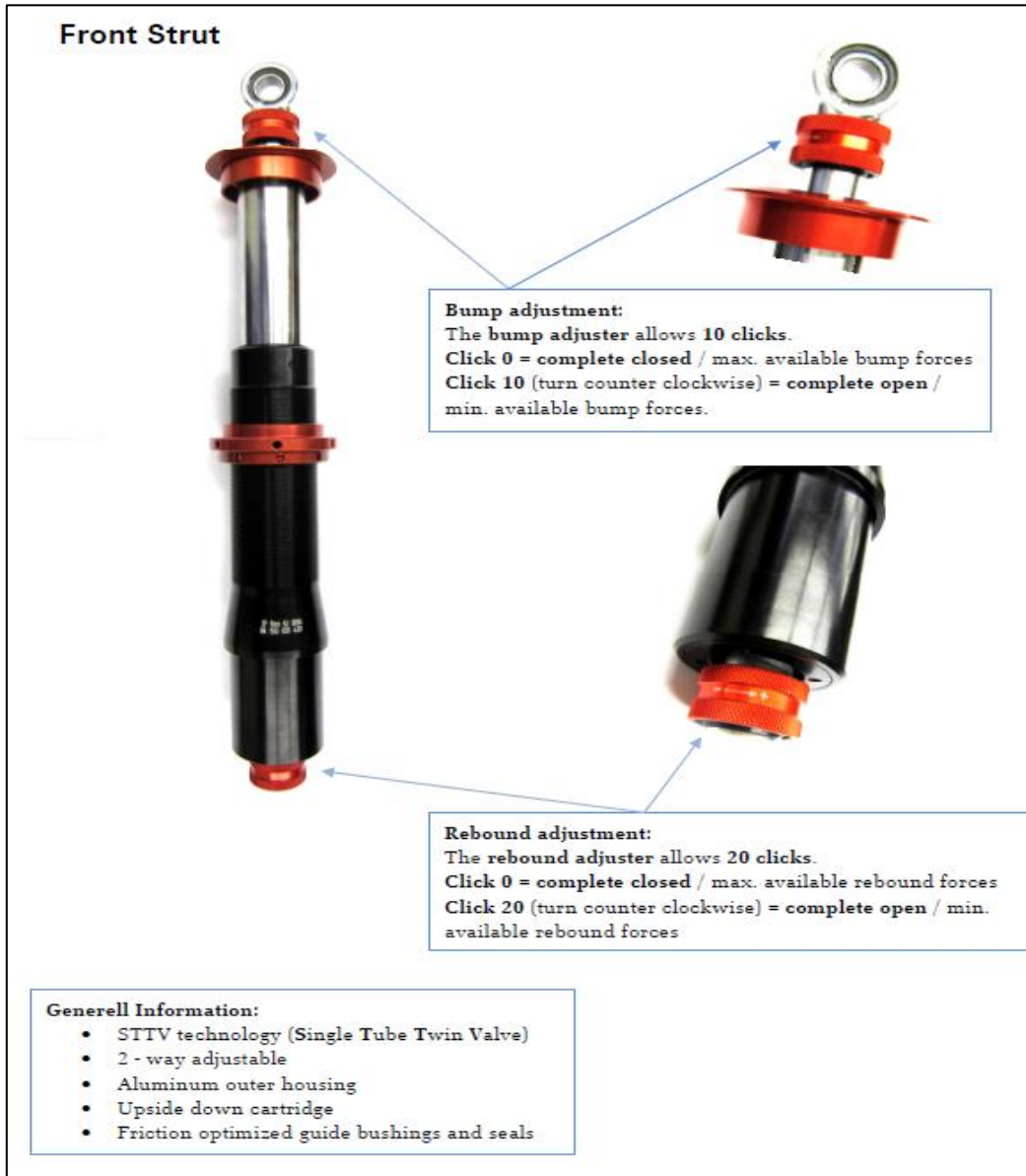
-  The rear Camber regulation does not have relation with the toe movement, so you can change rear camber without any toe movement.
-  After the camber adjustment job, check that the uniball is placed in the middle of its housing.

Rear Camber value vs rear camber regulation screw turn.

Camber	Camber arm regulation
-2	1,5 Turns
-2,5	1 Turns
-3	0,5 Turns
-3,5	0
-4	-0,5 Turns
-4,5	-1 Turns
-5	-1,5 Turns

4.6 Dampers

Front Damper information
STTV technology (Single Tube Twin Valve)
2 – way adjustable in bump and rebound
Aluminium outer housing
Upside down cartridge



Notes:

- Start to count the clicks from close (+) to open.
- Be careful, do not squeeze to close strong the last click.

Rear Damper information
The rear damper is equipped with a 1-Way parallel adjuster.
Each click adjusts the bump and rebound characteristics parallel.



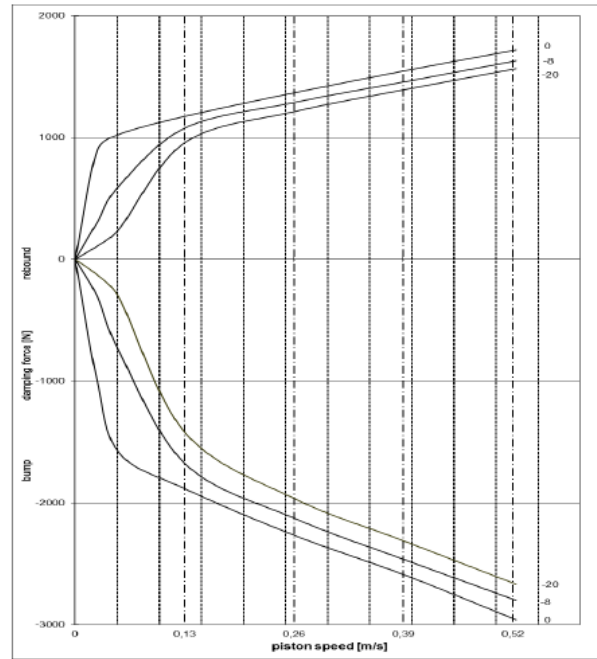
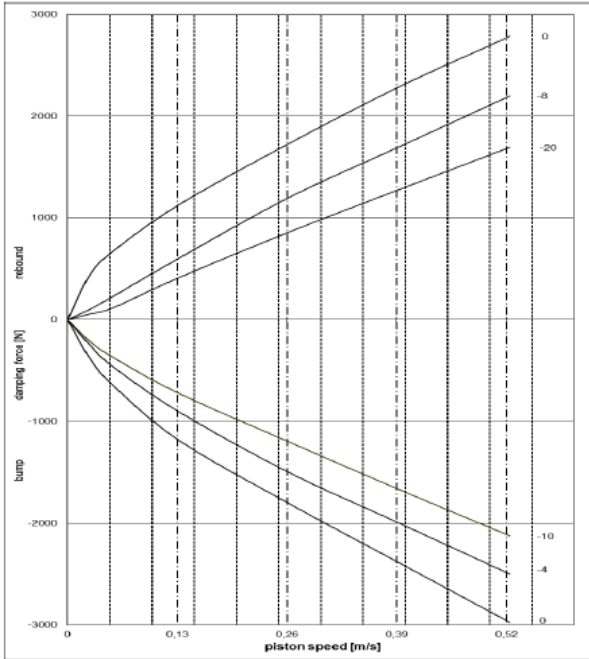
Notes:

- Starts to count the clicks from close (+) to open.
- Be careful, do not squeeze to close strong the last click.

Characteristics and adjustment range of the front and rear struts:

FRONT

REAR



The available springs for front and rear struts are the following:

Measures	Nm	Remark
160-60-120	120	Front use recommended
160-60-110 (car delivery - front)	110	Front use recommended
160-60-100	100	Front use recommended
160-60-90 (car delivery - rear)	90	Rear use recommended
160-60-80	80	Rear use recommended
160-60-70	70	Rear use recommended

4.7 Antiroll bars

Two front anti roll bar available: 22x2 and 22x3. **Car delivery: 22x3.**

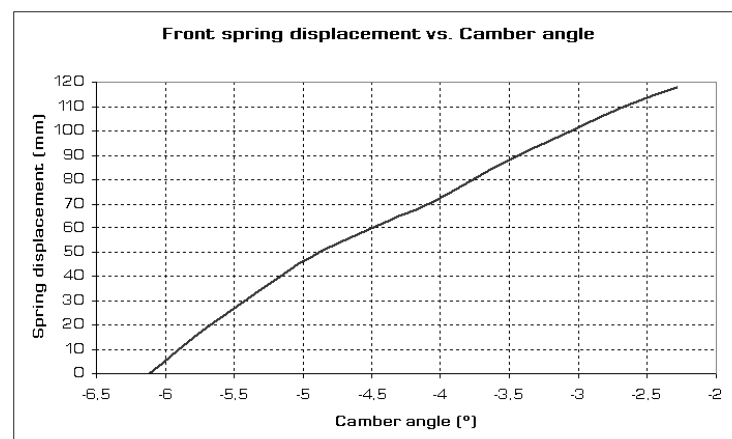
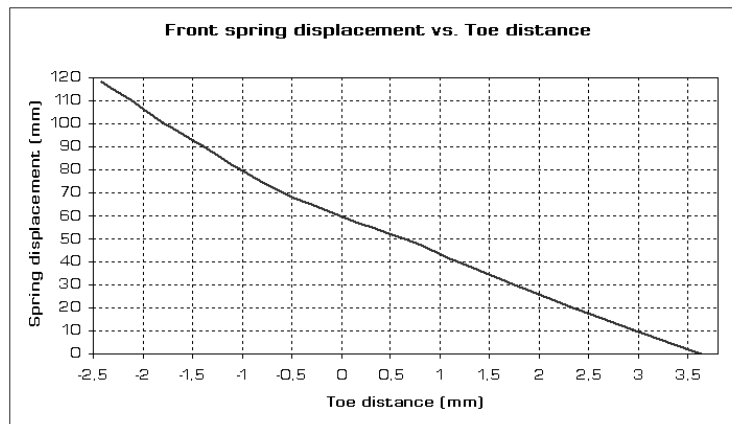
FRONT ARB		
OD (mm)	22	22
Thickness (mm)	2,0	3,0
Chassis Roll Stiffness from ARB		
Hard (Nm/°Chassis)	1548	2021
Mid (Nm/°Chassis)	991	1293
Soft (Nm/°Chassis)	688	898

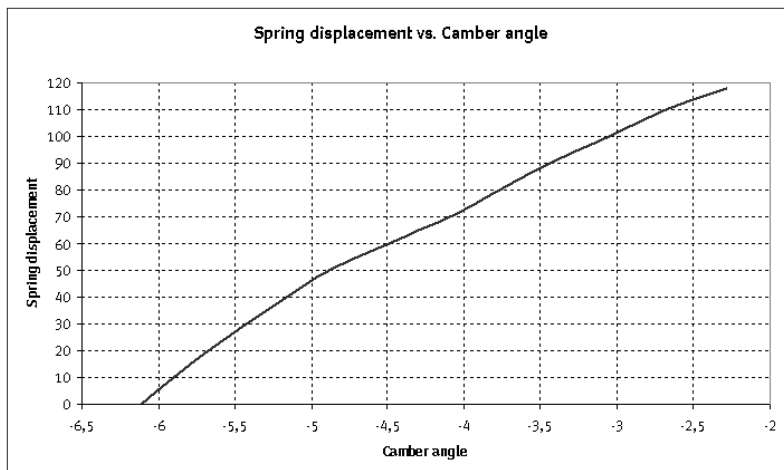
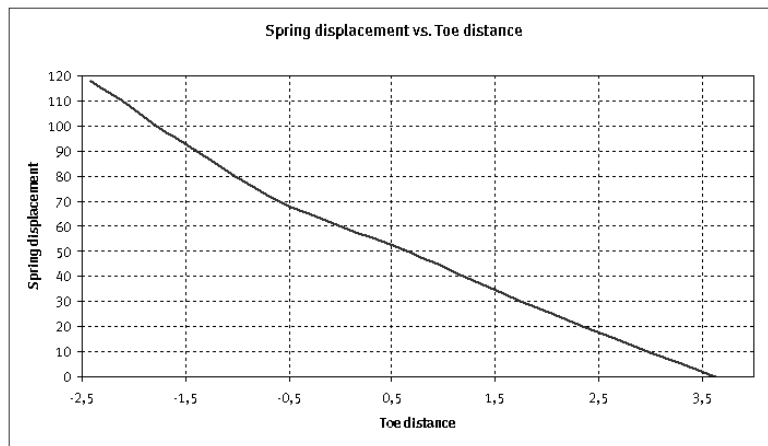
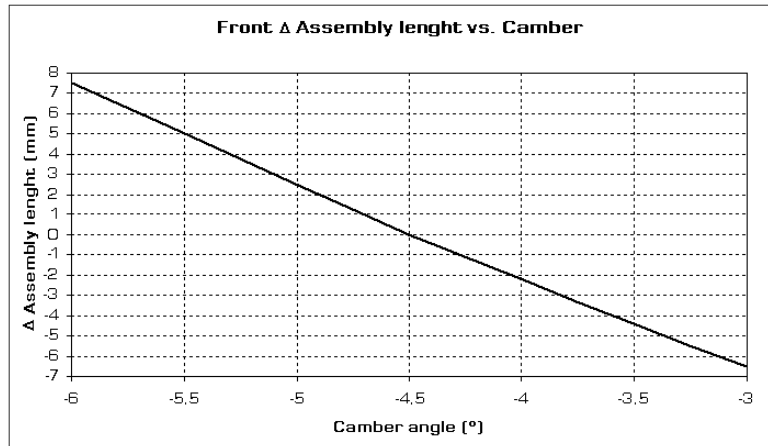
Two rear anti roll bar available: 22x3 and 22x4. **Car delivery: 22x3.**

REAR ARB		
OD (mm)	22	22
Thickness (mm)	3,0	4,0
Chassis Roll Stiffness from ARB		
Hard (Nm/°Chassis)	1252	1454
Mid (Nm/°Chassis)	1061	1232
Soft (Nm/°Chassis)	898	1043

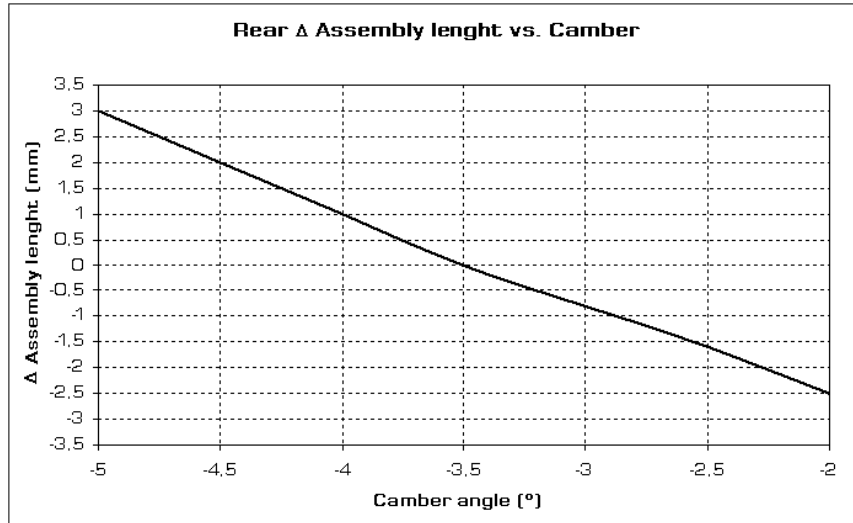
4.8 Kinematics

FRONT





REAR

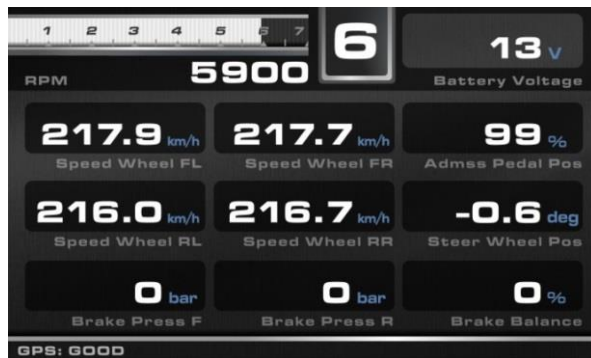


4.9 Brakes

Available brake pumps range.

MASTER CILINDER	Push Rod	Remarks
AP 15 MM	PRT 110	
AP 15.9 MM	PRT 110	
AP 16.8 MM	PRT 110	
AP 17.8 MM	PRT 110	
AP 19,1 MM	PRT 110	SEAT Sport car delivery
AP 20,6 MM	PRT 110	
AP 22,2 MM	PRT 110	SEAT Sport car delivery
AP 23,8 MM	PRT 110	

- It's not advisable to use more than two pump diameters between front and rear.
- On the dashboard screen it's shown the front / rear pressure and the balance percentage. The recommended percentage is 60% front. (car delivery)
- Brake balance channel: $\frac{P_{BRK_FRONT}}{P_{BRK_FRONT} + P_{BRK_REAR}} \times 100$



4.10 Aero

All aerodynamic parts have to be in good conditions. Check periodically the fixations.

Rear wing:

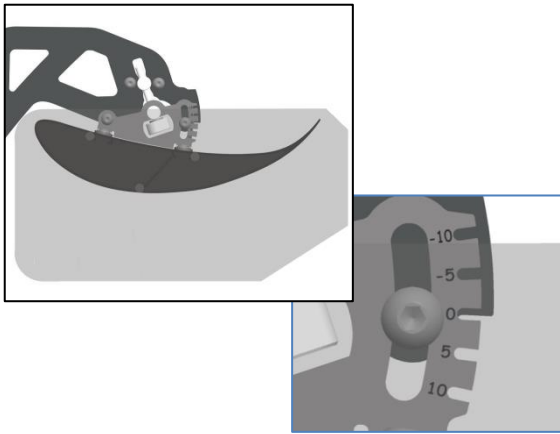
- The rear wing has extensive regulation. Zero is a standard setting for the car.
- Wing angle – 5° has considerable influence on the rear down force.
- Wing angle – 10° has big influence on the rear down force as well as speed.
- Lateral plates are individually adjustable. (2015 lateral plates)

Front splitter:

- Check periodically the fixations. Have to be in good conditions.
- Check the front splitter angle that has to be at 0° when pitch is 0°.

Pitch:

- Measure the pitch angle on the body shell over the door sill.



5 WORKSHOP MANINTENANCE

5.1 FIRST ROLLOUT

SEAT Sport checks all cars in a rollout before customer delivery. This rollout consist in 5 laps in a circuit, reaches high speed in a long straight and check the launch control in a standing start. After the rollout the SEAT Sport engineers check the data acquisition and all car functions.

IMPORTANT: Although the SEAT Sport is doing a rollout check is strongly recommended to carry out a suspension check before first's customer rollout and after the first free practice.

(sub-frame, power train, engine brackets, etc, fixations.)

5.2 Check list

After any rebuild or main job is recommend to carry out a check list. It's possible do it with a lap top with RaceStudio3 program or directly to the car display.

		CHECK LIST with ENGINE STOPED	OK
ENGINE	Oil level	On the dipstick mark / Toil > 70°C	
	Water	On the bottle mark	
BRAKE	Brake fluid	On the bottle mark	
		CHECK STEERING WHEEL FUNTIONS	OK
FUNCTIONS	Rain Lights		
	Driver Fan		
	Page Change		
	Safety Brake Signal		
	Diff Map Change		
	Windscreen Water		
	Wiper		
	High Beam		
AIM on-line	conditions	CHECK LIST with ENGINE IN IDLE SPEED	Value OK
ENGINE	Water Temp	87°C / 92°C (thermostat cicle)	
	Fan	Active at 92°C	
	P oil (WT<25°C)	4 bar	
	P oil (WT>25°C)	2,5 bar	
	P fuel low	> 4,1 bar	
	Alternator	> 13,5 volts	
	Boost Press	0,3 bar @ 2500rpm	
	Speed limiter	Gear 4 @ 60km/h	
GEARBOX	Tipp TS	Changing gears / check SWM signal -- +	
	N° gear display		
DIFF	Activar Pump		
FUSEBOX	FLAG_FBX_1	0	
	FLAG_FBX_2	0	
	FLAG_FBX_3	0	
	FLAG_FBX_4	0	
	FLAG_FBX_5	0	

5.3 Vehicle & parts identification

V.I.N. (Vehicle Identification Number) is welded on the roll cage

Nº: **VSSMK35F4ESSPXXXX**



Engine identifications.

Nº: **CJX xxxxxxxx**



Distribution seal

detail



Turbo seal detail



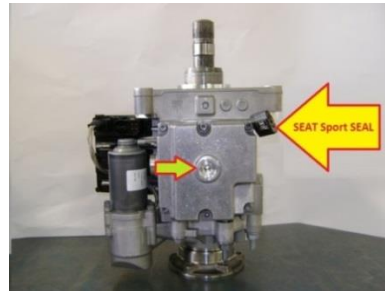
Gear box identification.

Nº: **C0xx**

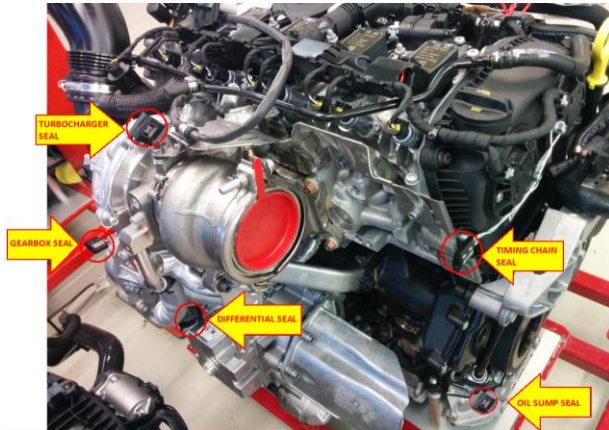


Slip differential identification

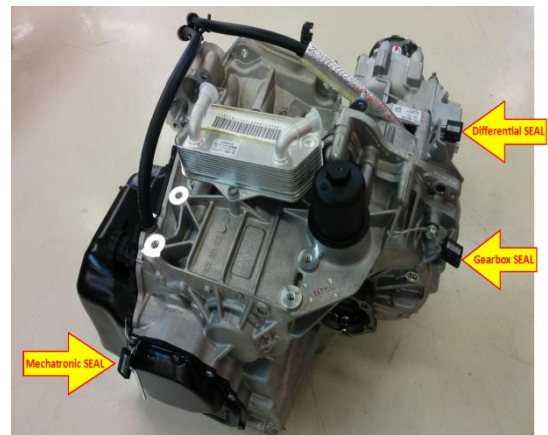
Nº **D0xx**






General ENGINE seals view:
view



General GEARBOX – DIFF seals



5.3 Fluids information

Fluids	From	Remarks	Quantity
Engine		CASTROL EDGE 5W-30 VN0000053000	Substitution with filter change 5,7 lts
Gear box	VW-Audi	_G052182A2	Substitution 5,2 lts Mechatronic 3 – 4 lts
Electronic Slip Differential	VW	_G060175A2	Unit 0,7 lts Substitution 0,5 lts
Drive shaft	VW-Audi	VN0000040401	100 gr
Coolant		VN0000060400	5 lts
Brake fluid		CASTROL SRF VN0000062400	—
Fuel	PANTA (Eurocup SEAT)	NS 102 Ron	
Windscreen cleaner	Free		0.....2 lts

Notes:

- SEAT Leon Cup Racer: Use only the fuel distributed on the race track.
- It's forbidden any product addition on the fuel.
- Fuel: standard fuel 98 oct. from petrol stations to 102oct.
- Is recommended not to mixt fuels, could contaminate one from the other.
- Gearbox and Slip differential are supplied with the right level. It's not necessary any level control if there aren't leakages.

5.4 Engine service

Control routine before start to run:

- Check the oil level: With the oil temperature up to 70°C, stop the engine and wait 2 minutes, then you can check the oil dipstick. The oil level must be at the top of the marked zone on the dipstick.
- Check the water level before start.
- With the engine running, check there isn't any oil, water or fuel leakage.
- Check the fan functionality. Operating range 92°C to 87°C.

Maintenance routine:

- Change the engine oil and oil filter at the indicated mileage.
- Engine spare parts must be from VW group or SEAT Sport original parts, detailed on the Leon Cup Racer parts catalogue.
- Use always fluids detailed on the Leon Cup Racer parts catalogue.
- Clean and check the air filter in each event. At the urban circuits is recommended clean or replace more frequently. It's also recommended to have two or three air filters and replace during the weekend. Change is strongly recommended in case of rain.
- Check that the alternator belt is clean and there aren't small stones inside the Poly-V.
- Often clean the radiator and intercooler panel.
- If any doubt, contact to the SEAT Sport service.
- Check the SEAT Sport seal is in good condition.

Parts subject to frequent service:

Engine	Torque	Remarks
Oil drain plug	By hand	Change the plastic cap
Oil filter plastic cover	50 Nm	
Oil filter	<<	Moisten the "O" ring
Spark plug	2,8 Nm	Use original VW parts

For a detailed parts substitution information download yourself the "Workshop Manual" from our web, ["www.seat-sport.com"](http://www.seat-sport.com).

5.5 Air filter






Air filter	Torque	Remarks
Air filter substitution	By hand	4 small bolts over plastic. Be careful.
Air filter clean		1) Clean the cotton air filter following the procedure showed. 2) DO NOT use compressed air or high-pressure air to clean. Use only the recommended oil for cotton filters.

Notes:

- **The air filter type and measurements are identified on the "Technical Regulations". It's not allowed any modification or change.**
- The air filter clean and properly oiled is critical for the turbo charger life. **It is strongly recommended to follow the cleaning procedure as well as the timing.**
- After using in rain conditions is recommended the cleaning or replacement.



Air filter std. clean procedure

	<p>1</p> <p>Remove the larger dirt by shaking or tapping your filter gently onto a clean surface. DO NOT use compressed air which may damage the filtering element.</p>
	<p>2</p> <p>Distribute the BMC detergent on the filter. Allow to absorb for about 10 minutes. DO NOT use caustic products such as petrol or oil. USE ONLY BMC DETERGENT.</p>
	<p>3</p> <p>Wash your filter in cold water. Rinse well ensuring that dirt does not enter the filter pleats. DO NOT use high-pressure water.</p>
	<p>4</p> <p>Let in a accurate proper way your filter dry naturally away from heat sources on absorbent paper or on a clean cloth. DO NOT use a hair-dryer or compressed air.</p>
	<p>5</p> <p>Remove the original top from the regenerating fluid bottle. Make a small hole in the spout dispenser and screw onto the bottle. For correct oiling we recommend passing the regenerating fluid twice over every pleat on both sides of the filter.</p>
	<p>6</p> <p>The oiling procedure using the aerosol spray. Hold the spray 15 cm from the filter and spray the complete surface. Repeat the operation on both sides of the filter.</p>
	<p>7</p> <p>Allow the oil to absorb on a level surface for around 30 minutes. Remove any excess oil on the rubber and check that the filtering element is homogeneously red (Picture 7). If not, repeat the oiling process described Previously. After oiling the filter is ready to be reinstalled.</p>

5.6 Gearbox & Slip differential service

Control routine before start:

- Check that there isn't any oil leakage.
- Operating range 70°C to 135°C.
- Do not load the engine until the gear box temperature its upper to 70°C. (Control on the display screen).

Routine maintenance:

- Change the gear box oil and filter in the indicated mileage. (see mileage table)
- Oil filter, as well as the rest of the gear box spare parts must be from VW group or SEAT Sport original parts, detailed on the Leon Cup Racer parts catalogue.
- If there isn't any oil leakage there is not necessary any level control. (paragraph 6)
- Check the SEAT Sport seal is in good condition.

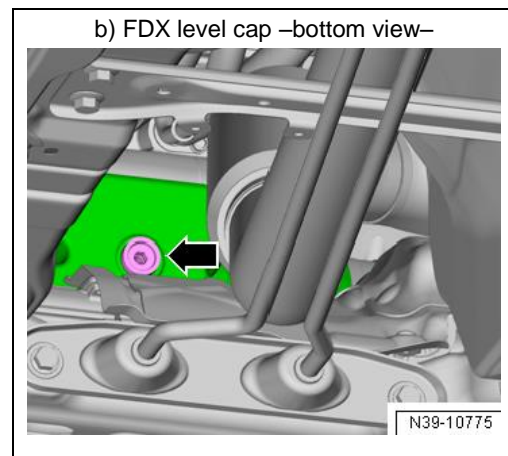
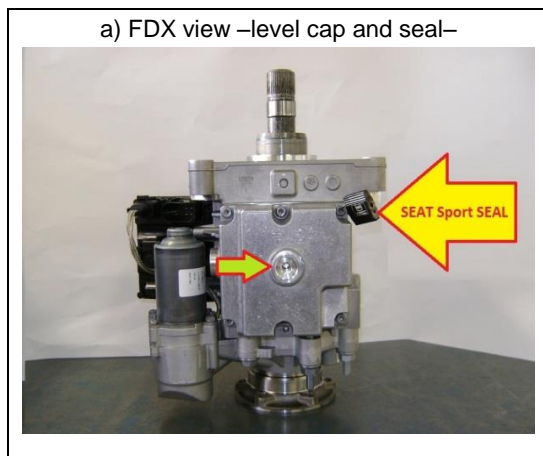
For more detailed maintenance or parts substitution information download yourself the "workshop manual" from our web, "www.seat-sport.com".

5.7 FDX - Slip differential control & service

Routine maintenance:

- Change the FDX oil in the indicated mileage. (See mileage table). Use only the recommended oil.
- If there isn't any oil leakage there is not necessary any level control.
- Send to SEAT Sport for revision when recommended service mileage is reached.

Slip differential jobs	Torque	Remarks
FDX oil level check cap	15 Nm	Change every time



How to change the FDX oil:

To replace the oil is recommended to disassemble the unit from the car.

Open the cap bellow and drain it and close it again. Measure the quantity and put in the same quantity.

If you are doing it mounted on the car, take care, 100 ml will not be possible to add from the cap (shown in the picter "b" above). The last 100ml have to be add trough the venting pipe on top.

Notes:

- In case of disassembling the unit from the car, the unit must be positioned in vertical position, as it is shown in the picture, to avoid any oil leakage.

5.8 Fuel

The fuel tank is coming from series, using the standard flow fuel pump and additionally there is a second flow pump on the opposite side.

Standard Fuel tank features	
Fuel tank type	Standard fuel tank from Quattro version
Capacity	55 lts Standard tank / *option 60 lt additional fuel tank (LR version)
Minimum fuel level before engine fault	> 8 lts. (in long corners with high lateral forces)
Additional fuel tank features	
	FT3 FIA Homologated
	60 lt additional fuel tank // possible to reduce the capacity by adding balls.
	This additional fuel tank don't have fuel pump. It supplies the main tank by gravity.

Notes:

- The Quattro version fuel tank allows use a straight exhaust system, decreasing the fuel temperature due to the exhaust irradiation. Check periodically all tank protections are in good conditions.
- **After a crash or out of track driving check the inner flow fuel pumps fixations.**

Fuel tank drain:

Hydraulic: There is a FIA fast fuel coupling placed on the engine bay. The contra connector is available on the parts catalogue.

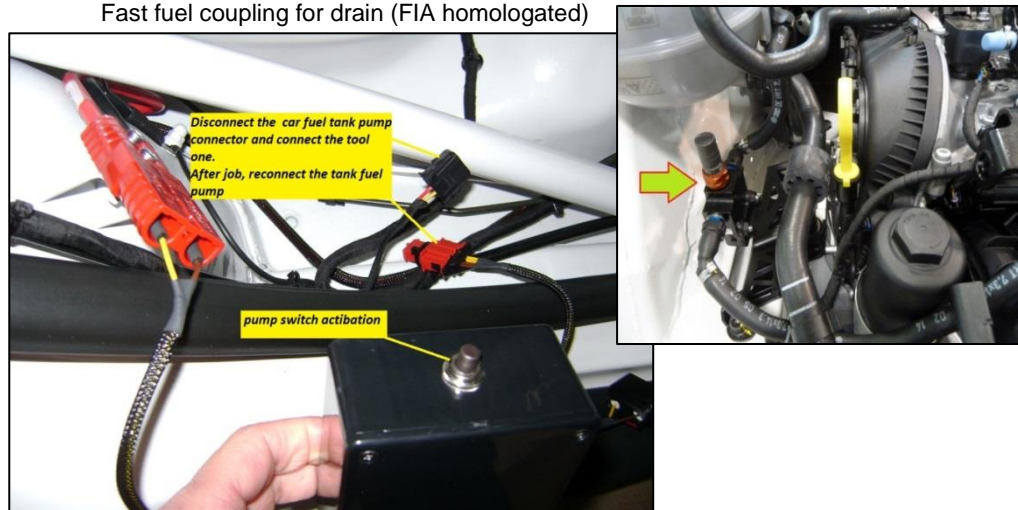
Electric: The car wiring loom is ready to connect an external interface wiring in order to activate the main fuel pump directly.

How to proceed:

- For the fuel tank pump activation is necessary to connect the SSp tool between the fuel pump wiring connector, placed on the right rear door and beside to the auxiliary power supply. Unplug the car connector and plug the SSp tool connector.
- Connect the front hydraulic pipe to FIA fast coupling.
- Connect now the tool to the main supply auxiliary connector and push the tool switch.

For safety, it is strongly recommended to carry out the process with the main switch off.

Fast fuel coupling for drain (FIA homologated)



Note:

- **IMPORTANT:** Take care, don't damage the fuel pump during the drain process. Do not maintain the pump activated without fuel. Stop the drain when appears air bubbles.
- **IMPORTANT:** The drain tool connects directly to the battery. **DO NOT ACTIVATE THE TOOL SWITCH WITH THE CAR MAIN SWITCH ON.**
- On the Leon Cup Racer parts catalogue it is available the extraction kit.
- To carry out this procedure is also possible to connect the extraction tool to an auxiliary battery help.
- The Leon Cup Racer body shell is ready to add an additional fuel tank. This tank would be connected in line with the first one and supplies the fuel to it.

5.9 Electronic modules

The car has installed the following modules:

Electronic MODULES	Remarks	Place
ECU	Continental /Symos 18.1	Engine bay
Mechatronic	VW	Inside gear box
Electronic slip differential	BorgWarner	FDX (external)
Low fuel pump control	PWM control module	Fuel tank (external)
Electronic Steering rack	VW	Front subframe
ESP unit	Continental (not hydraulic connexion for cup cars)	Cockpit
Gateway	VW	Cockpit
Black box	Audi	Cockpit
MXG display / logger	AIM	Cockpit
Fuse box	SEAT Sport	Cockpit
Driver module	SEAT Sport	Cockpit
Transponder	XXX	Engine bay

5.10 Airjack

The SEAT Cup Racer car is using the Krontec
http://www.krontec.de/katalog_e/start.htm

Air lance:



Part No.	Beschreibung Description	Gewicht Weight [g]	Gewinde Thread	Betriebsdruck Operating Pressure [bar]	Größe Size L / Ø
KRONTEC Luftilanzensystem bis 40 bar / KRONTEC Air lance system up to 40 bar					
LL-03	Luftlance/Air lance „easy push“		M16 x 1,5 fem ¹	0 – 40	230 / 37 mm
LL-16	Anschlussventil/connection valve	60	06D	0 – 40	86 / – mm

6 PARTS MILEAGE

ENGINE	Inspection	Service	Change	Remark
Engine		8.000	12.000	Serviced by SEAT Sport
Spark plug			2.000	Use original parts only
Engine oil			1.000	Use recommended oil only
Oil filter			1.000	Use original parts only
Cotton air filter	Once x event	Once x event	season	2 units rolling change adv.
Poly-V belt	Once x event		2.000	

TRANSMISSION	Inspection	Service / km	Change	Remark
Gear box		8.000	12.000	Serviced by SEAT Sport
Oil gear box			5.000	Use original parts only
Gbx oil filter			5.000	
FDX (slip differential)		8.000	12.000	Serviced by SEAT Sport
FDX pump			4.000	Replace at this mileage
Oil FDX			5.000	Use recommended oil only
Drive shaft	Once x event	5.000	10.000	

FRONT AXLE	Inspection	Service / km	Change	Remark
Front dampers		5.000 / 1 year	8000	Seat Sport service
Ball joints	Once x event		5.000	Always check tolerance
Steering rod inner joint	Once x event		5.000	Always check tolerance
Steering rack			15.000	
Wheel hub	Once x event		10.000	Change when noise
Front Discs	Once x event		1.500	Change when cracks
Disc bells			5.000	
Brake balance bar	Once x event	4.000		

REAR AXLE	inspection	Service / km	Change	Remark
Rear dampers		5.000 / 1 year	8.000	Seat Sport service
Ball joints	Once x event		5.000	Always check tolerance
Wheel hub	Once x event		10.000	Change when noise
Rear Discs (solid)			1.500	
Wheel nuts			3.000	

SECURITY PARTS	Service / km	Change	Remark
Extinguisher	5 years		Service in SSp or OMP
Bucket		5 years	
Safety Belts		5 years	

7 SAFETY

SAFETY	Remarks	Images
<p>AIR JACK</p>	<p>3 Air Jacks on the car Max press 30 bar</p> <p><u>Safety:</u> Safety Props: For any job under the car Use ALWAYS the air jack Safety Props. (x3)</p>	
<p>EXTINGUISHER</p>	<p>Material: Aluminium Weight: 6.2 kg Activation: Electric Use: Cockpit and engine bay</p> <p><u>Safety:</u> Check the inner press bottle. Have to be in the green area. Fire extinguisher system: Check always that the 9v inner battery is in good conditions. Do not forget to put the toggle in "on" when car is running.</p>	
<p>BACKET</p>	<p>FIA Homologated 8855 – 1999 Gel coated fiberglass shell W side fixing points HANS Compatible</p> <p><u>Safety:</u> Check the homologation label "expiry date" period. Check ALWAYS the fixations Change if big crash.</p>	
<p>SAFETY BELT</p>	<p><u>Safety:</u> Check always the fixations are well fixed Check the homologation label "expiry date" period... Check always the driver is strongly fixed.</p>	