USE AND MAINTENANCE INSTRUCTIONS

Use and maintenance instructions
T-REX Euro 4 - Euro 5
Rev. 05 (November 2010)

⚠ Important notice.
On new vehicles, after wheel replacement, re-fasten wheel studs after about 50 – 70 Km covered.

⚠ Recommendations for the driver.
Please read carefully use and safety instructions before than driving Your vehicle.
Important recommendations are particularly pointed out in the text.

⚠ Run-in.
An accurate run-in is very important for the life time of engine and transmission and also for vehicle reliability itself. Both new engines both revamped engines will not have to deliver max power during the first 50 running hours (about 1.000 Km).
After this period it is possible to gradually increase speed and load up to the maximum rate.

Printed in Italy. November 2010.
We reserve the right to change technical details about the data and illustrations contained in this manual „Use and maintenance instructions".

Dear Customer,

Thank you for preferring a BREMACH INDUSTRIE vehicle

The purpose of this Manual is to introduce you to every individual detail about your vehicle and to teach you how to control it correctly.

Please read this Manual carefully before using the vehicle for the first time.

This Manual contains important information, advice and recommendations for using the vehicle, which will help you make the best possible use of all the technical features of your vehicle.

As the vehicle has been equipped as requested in the order confirmation, it may differ from the reported descriptions and illustrations.

As BREMACH INDUSTRIE vehicles can be strongly customized, your vehicle may differ from the reported descriptions and illustrations. If your T-Rex is equipped with optional features not illustrated or described in this manual, please contact our Customer Service who will be glad to provide you with any necessary information.

The User Manual is an important document that you should always have available on your vehicle.

We recommend to strictly follow the maintenance schedule reported so as not to jeopardize driving safety and vehicle durability.

This Manual refers to several models, which have common features. It also deals with special optionals.

Have a nice trip!

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MAINTENANCE

To safeguard the value of the vehicle and its warranty, revisions and maintenance should be carried out by qualified persons belonging to the following service networks:
BREMACH INDUSTRIE service network. Below is invoked only BREMACH for all components and parts of the vehicles.

- FPT (Fiat Powertrain Technologies) service network for engine and transmission parts and for general service
- For the vehicles used in countries where there are no BREMACH and/or FPT service points, please contact the manufacturer's or importer's network.
- All maintenance and revisions instructions are reported in the BREMACH maintenance manual that you receive together with the User Manual.
- The BREMACH manufacturer's guarantee as well as the FPT engine guarantee are valid only if original spare parts are used.

IMPORTANT: For any request please report the model and chassis number from the Registration document. The frame number and the model are printed on the right side of the frame.

MODEL:	**CHASSIS NUMBER:**

VEHICLE IDENTIFICATION FOR ALL VERSIONS

VEHICLE IDENTIFICATION PLATE

The vehicle identification plate is located: printed on the right side of the frame close to driver cabin. The characters string contains all data related to the specific vehicle.

"chassis" vehicle identification position

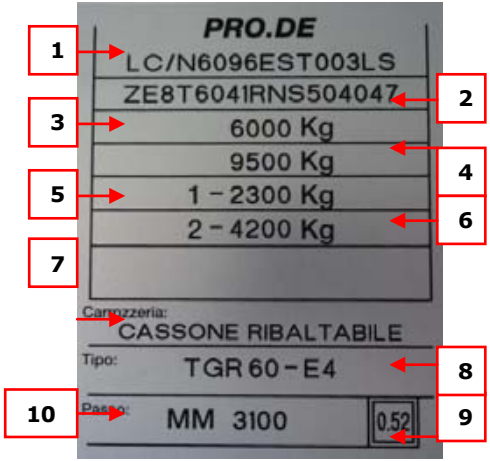
INSIDE THE ENGINE COMPARTMENT

A plate with all vehicle data is located inside the engine compartment.
Description of the plate data.

1.Approval number.
2.Vehicle identification number.
3.Allowable gross vehicle weight.
4.Allowable gross combination weight (vehicle+trailer)
5.Allowable front axle weight.
6.Allowable rear axle weight.

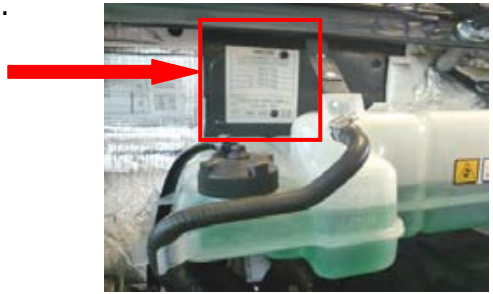
7.Body:
- chassis
- flat bed
- tipper
- van

8.Type description
9.Flue gas coefficient
10.Wheelbase (mm)



Engine compartment plate

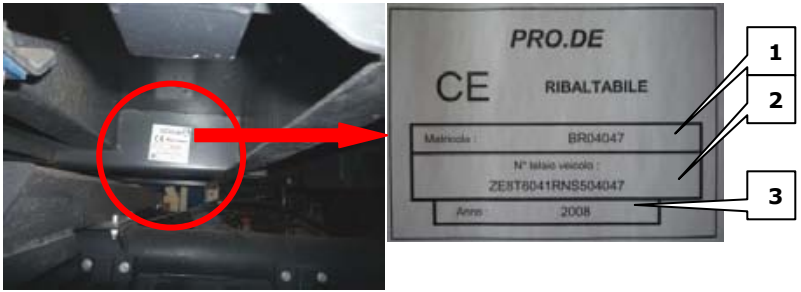
Vehicle identification plate in the engine compartment.



Engine compartment plate position

TIPPER PLATE

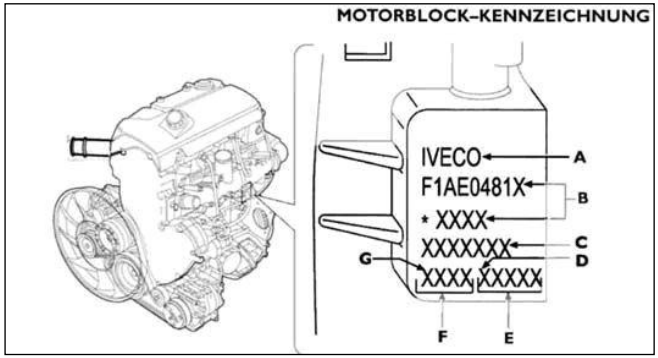
The plate is located on the right side of the tipper subframe



Tipper plate

ENGINE BLOCK MARKING

F1 engine number



Engine plate

A: Manufacturer
B: Engine type and version
C: Engine serial number
D: 1st figure Main journal No. 1 (Engine front side)
E: Selection class Main bearing diameters
F: Selection class Cylinder liners
G: 1st figure Cylinder No. 1 (Engine front side)

WARRANTY

The right to benefits under warranty will be recognized only if the conditions set in the individual terms of our "general sale conditions" are satisfied.

VEHICLE DATA FORMS

On these vehicle forms are reported all the technical data concerning the equipment description and eventual optional features.
This form is therefore an important document for the establishment of original BREMACH spare parts necessary for the vehicle and should always be presented to the authorised workshop before any work on the truck or before buying spare parts.

- in any request for information regarding the vehicle and spare parts orders, always indicate the type of the vehicle and its identification number and the engine number, the chassis number and / or its group.
- This information is of considerable help to our staff.

RUN-IN PERIOD

Drive carefully and avoid high engine speeds.
During the run-in period of your vehicle you must not follow any complicated procedure.
If during the first 1,000 kilometres you will follow some simple tips you will ensure a long life for your vehicle and you will reduce the subsequent maintenance costs.

- Do not travel at a speed exceeding 110 km / h.
- Run the engine only in the intermediate speed between 2000-3000 rpm.
- Do not start with the accelerator pressed down (full gas start).
- For the first 300 km avoid sudden braking.
- Change gear often keeping average rpm.
- For the first 800 km do not travel with a trailer.

TECHNICAL DATA

ENGINE FEATURES TABLE

ENGINE TYPE	IVECO F1A E4	IVECO F1C E5 with DPF*
Displacement (cm³)	2287	2998
Bore (mm)	88	95,8
Stroke (mm)	94	104
Number of cylinders	4	4
Max power. (kW/Ps)	85/116 @ 3900 rpm	125/170 @ 3500 rpm
Max torque (Nm/kgm)	270/27,5 @ 1800 rpm	400/40,7 @ 1250 rpm

*DPF: Diesel particulate filter

GEARBOX TABLE

Clutch	Model with F1A engine		Model with F1C engine	
Single plate dry clutch	ZF Transmission Type 6S300		ZF Transmission Type 6S400	
Mechanically or hydraulically operated	Gear ratio		Gear ratio	
	1st (gear)	1:6,727	1st (gear)	1:5,375
	2nd	1:3,47	2nd	1: 3,154
	3rd	1:2,555	3rd	1:2,041

	4th	1:1,778	4th	1:1,365
	5th	1:1;289	5th	1:1,000
	6th	1: 1,000	6th	1: 0,791
	Reverse	1:6,055	Reverse	1:4,838

TRANSFER BOX

Permanent four wheel drive for all versions.
Torque split 35%:65% (front:rear axle) with central differential.

BK FEATURES TABLE

BK "SLOW"		BK "FAST"	
STD		OPT	
Low speed High speed	1:1,028 1:3,086	Low speed High speed	1:1,298 1:3,894

AXLES TRANSMISSION TABLE

T-Rex on-road		T-Rex off-road	
Front axle	Rear axle	Front axle	Rear axle
9/46 (1:5,11)	9/46 (1:5,11)	9/46 (1:5,11)	9/46 (1:5,11)
10/45 (1:4,5)	10/45 (1:4,5)	10/45 (1:4,5)	10/45 (1:4,5)

Standard equipment:
- Rear differential locking system, with mechanical control.

Optional equipment:
- Front differential locking system, with mechanical control.

MAX SPEED TABLE – FOR ALL VERSIONS

Max speed with nominal rpm (3900 rpm)	Min. speed at 1250 rpm (max.torque)	
115-140 km/h (depending on tyre and ratio type)	BK Fast Transfer box	BK Slow Transfer box
In case of T-Rex 60 limited to 90 km/h	2-2,3 km/h	2-2,3 km/h

SUSPENSIONS

AXLES SUSPENSIONS

Rigid axles with parabolic leafsprings, double acting shock absorbers and stabilizer bars front (OPT) and rear.

BRAKES

- Hydraulic braking system with two separated circuits, vacuum brake and ABS.
- Front self-ventilated brake discs, rear brake discs.
- Mechanical parking brake acting on rear wheels.
- Brake regulator.

RIMS AND TYRES TABLE

T-REX	Steel rims	Tyres size
3,5 tons. Offroad OPT version.	16 - 6.50 H SDC	255/100 R16 (126/124K)
3,5 tons. Onroad standard version.	17,5 x 6.00	225/75 R17,5 (129/127M)
6,0 tons. Onroad standard version.	17,5 x 6.75	245/70 R17,5 (136/134M)
6,0 tons. Offroad OPT version.	16 - 6.50 H SDC	255/100 R16 (126/124K)

ABS

All models are equipped as standard with an ABS system, only the N2 model 6.0 tons is enabled to switch off the ABS.

WARNING

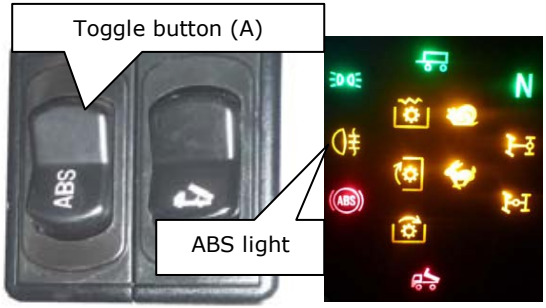
The disable of the ABS shall be done at very low speed otherwise it could cause „extended braking distances, the vehicle may be broken down by normal direction of travel".

Disable the ABS only if necessary, for example in case of snow, off-road use or special conditions.

To disable the ABS, proceed as follows:

- Push the toggle button ABS (A).
- When the ABS is disabled, a "red" warning light is on. To able the ABS push the toggle button on the opposite side.

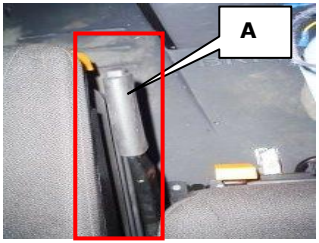
WARNING: If the ABS warning light is on during driving it means a system failure.



Button and light for ABS

In this case seek the nearest BREMACH service point.

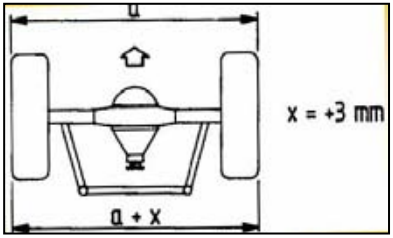
PARKING BRAKE CONTROL



To pull the handbrake A, pull the lever up until the vehicle is not moving for the slope and the load. To release the parking brake, pull the lever again slightly upward, press the button and lower the lever all the way down in position.
WARNING: Use the parking brake only when the vehicle is stationary!
WARNING: When the handbrake is pulled, the "parking brake" control light (P) is on.

ADJUSTMENT OF FRONT WHEELS TOE-IN

Toe-in (static load): 0-3 mm



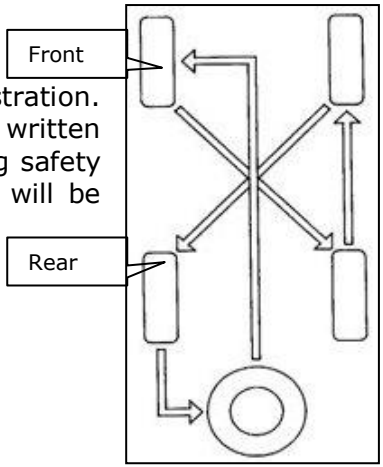
Toe-in

TABLE OF TYRE AIR PRESSURE

Model	Tyre dimension	Air pressure in bar (kg/cm²) for on road drive with fully loaded axle	
		Front axle	Rear axle
T-REX 3.5 tons offroad	255/100 R16	2,7	3,5
T-REX 3.5 tons onroad	225/75 R17.5	3,5	4,5
T-REX 6.0 tons offroad	245/70 R17,5	3,5	7,75
T-REX 6.0 tons onroad	255/100 R16	3,0	5,5
The air pressure in the spare wheel corresponds to the value of the rear wheels.			

Important note

Please respect the max axle loads and the tyre manufacturer's indications about tyre air pressure.
Use only homologated tyres, reported in the vehicle registration. Different tyres not here reported can be used only upon written authorization of rim and tire manufacturers. Otherwise driving safety and vehicle running license as well as your personal safety will be not ensured.



Tyre position change

Please make periodical checks (every 2 weeks) on all tyres air pressure, including spare wheel.
The control must be carried out when tyres are cold.
To guarantee even tyre wear, it is recommended to change tyre position after approx 25.000 km from front to rear axle.

TYRE AIR PRESSURE FOR OFF-ROAD DRIVING

Air pressure: According to the mission and depending on the axle stress, three different air pressure values are reported: road, track, sand.

Road drive:
The air pressure values here reported are valid with road driving under good conditions with concrete road surface (asphalt or compacted).
Offroad drive:
Track:
these air pressure values are meant for driving under bad conditions roads, tracks and allow driving on most of the low sand dunes. Max speed 65 km/h.
Sand/mud:
These air pressures allow the use of the vehicle on difficult terrain, with grip problems or with the risk of being stuck. In this case the constant speed must be limited to 20 km/h.
Operating conditions:
The following tables contain, depending on the different operating conditions, two different stress limits.

- Lower limit (underlined) for usage on difficult grounds and tracks. This limit is the result of several tests and should not be exceeded to get good performances.
- Upper limit (bold) for usage on roads. In this case the air pressure value for road use has to be applied.

LOAD CAPACITY

Tyre air pressure./bar (kg/cm²). To know exactly the correct pressure for on road use please make reference to the tyre table.

TYRE PRESSURE TABLE

Example:			Pressure bar (kg/cm²)		
Model	Tyre dimension	load/axle	Road	Sand	Mud
		1400	1,7	1,0	
		1600	2,0	1,2	0,6
OFFROAD	255/100 XZL	1800	2,0	1,4	0,7
		2000	2,3	1,6	0,8
		2200	2,6	1,8	1,0
		2400	3,0	2,0	1,1
		2600	3,25	2,2	1,2
		2800	3,6	2,3	1,4
		3000	3,9	2,5	1,5
		3200	4,25	2,7	1,6
		3400	4,5	2,9	1,7

ELECTRIC SYSTEM

- Battery: 12V/100 Ah, min. 450 CCA.
- Starter: 2,7 kW.
- Alternator: 14V 140A/1960W.

The battery is located on the frame on the right or left side. Open the two hinges to remove the battery cover, then the battery is accessible for maintenance.

Battery

BATTERY MAINTENANCE

The battery requires little maintenance. In temperate climatic zones, check the fluid level every 2 years, in hot climates the test must be performed every 6 months. To check the fluid level remove the battery cover (arrow). The fluid level in each cell must be at least 5mm above the battery plates. Top up only with distilled water. Keep the battery terminals clean and free of corrosion, applying time to time acid protection grease.

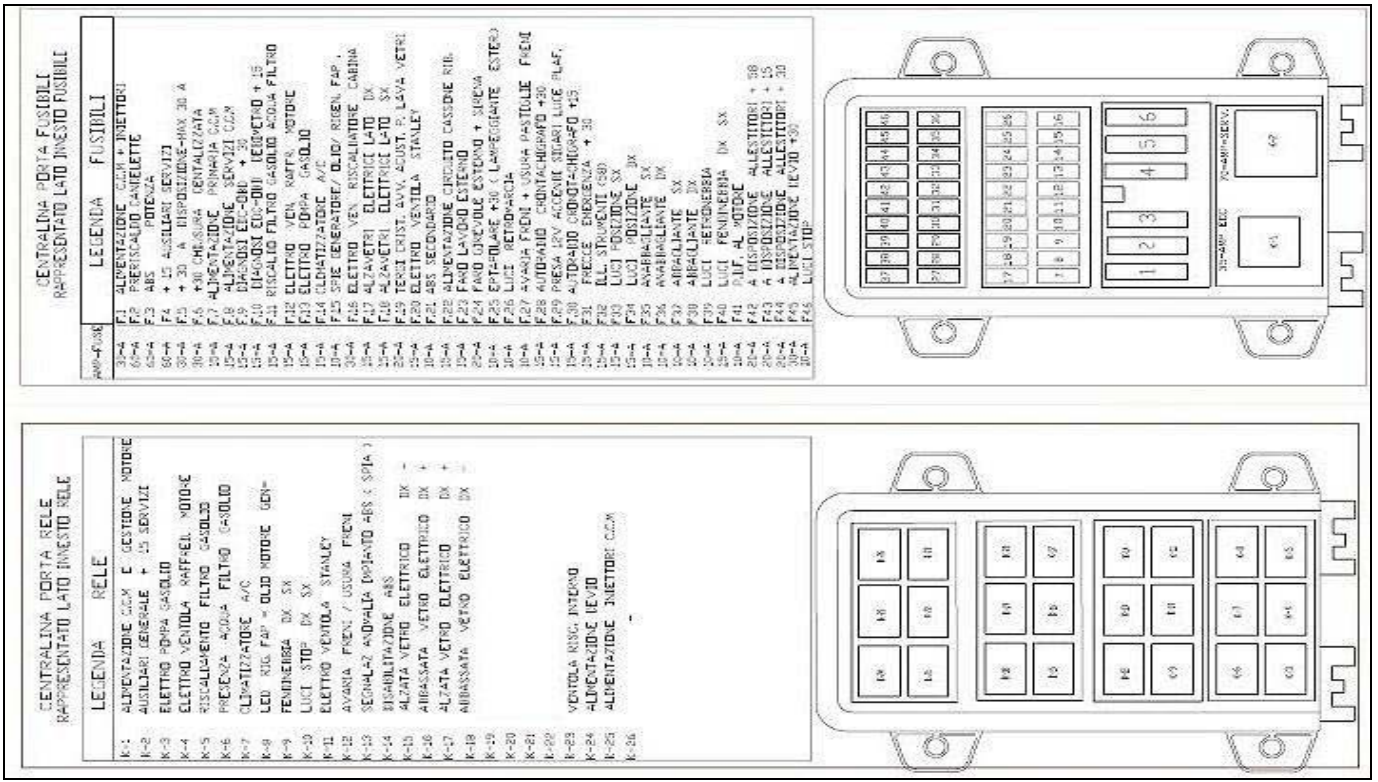
FUSES CONTROL UNIT POSITION

Open the driver door and remove the fuses cover placed on the dashboard on the left side below the steering wheel.

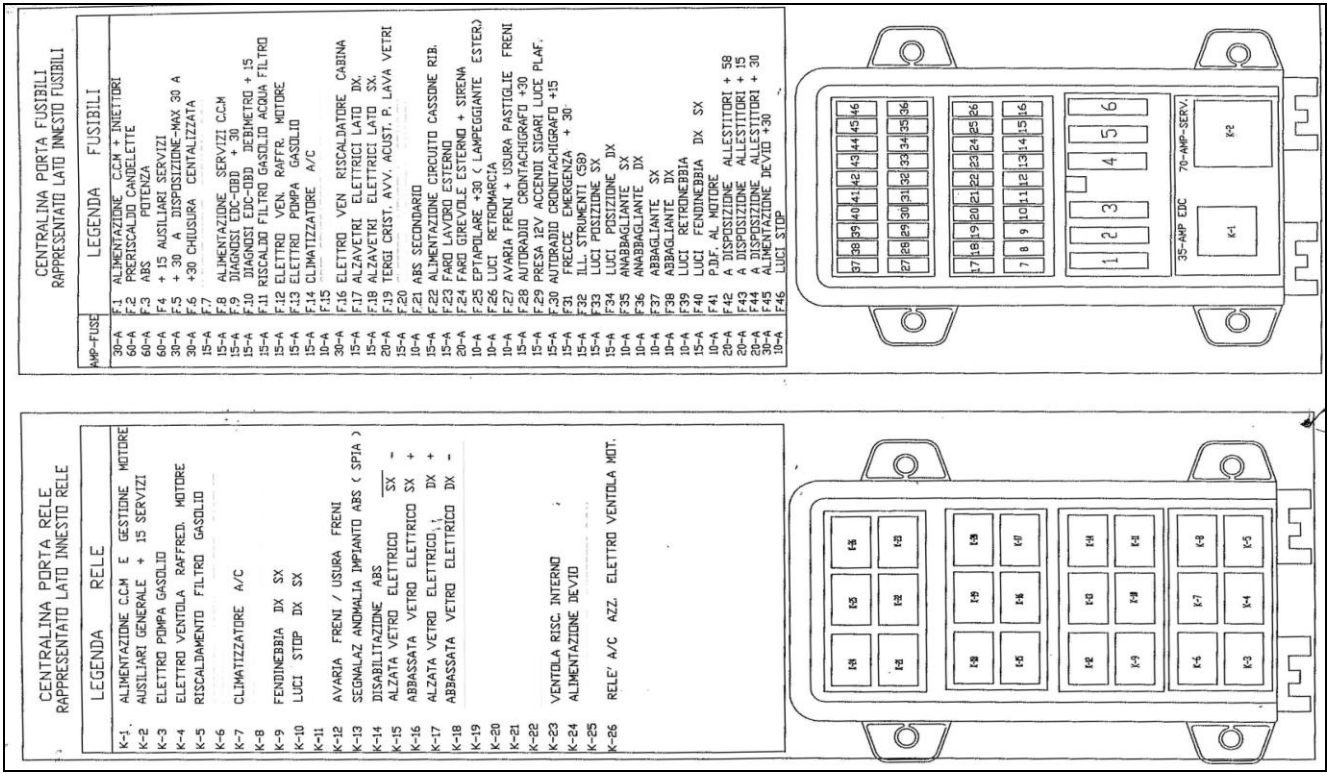
FUSES

The fuses are of plug type, "mini fuses" and "maxi fuses". The colour of the fuse corresponds to the Ampere value.

Fuses types and fuses control unit



Fuses position on F1A E4 model

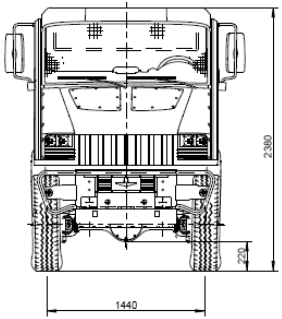


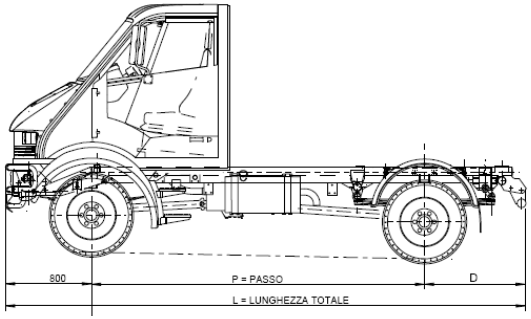
Fuses position on F1C E5 model

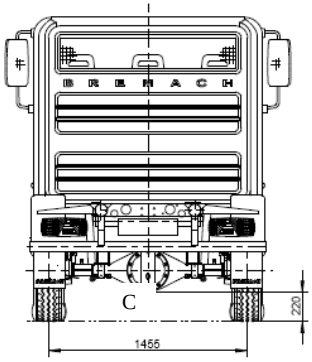
LAMPS TABLE

Lamp	Type	Watt
Headlights	Halogen H7	55
Front sidelamps	LED	0.6
Front direction lamps	Spherical	21
Rear lamps	Spherical	5
Rear direction lamps	Spherical	21
Brake lamps	Spherical	21
Plate lights	Spherical	5
Reverse gear lamp	Spherical	21
Fog rear lamp	Spherical	21
Inside lighting	Cylindrical	5
Roof reading lamp	Spherical	5

DIMENSIONS OF ON-ROAD T-REX MODEL







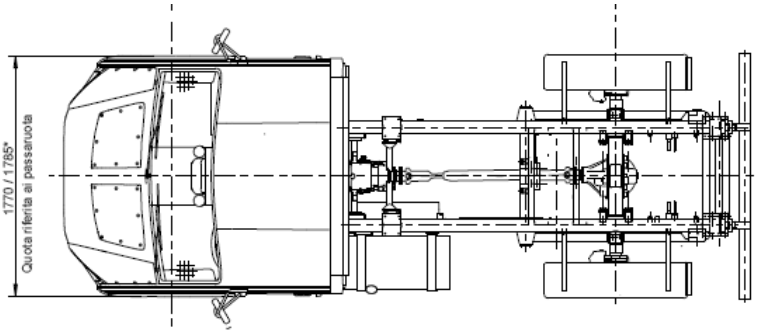


TABLE OF VEHICLE MAIN FEATURES

	STANDARD ON-ROAD T-REX				
Vehicle	Single cab				Track
Dimensions	N1/N2	N1/N2	N2	N2	C
Wheelbase =P	2600	3100	3450		1450
Total length=L	4380	4880	5230		
Wheelbase =P		3100	3450	3700	1610
Total length =L		4880	5230	5480	

IMPORTANT

All the dimensions are in mm. All dimensions are only for information and not binding.

GROSS VEHICLE WEIGHT

Model	On-road/Off-road
T-REX 35 Q (N1)	3.500 kg
T-REX 60 Q (N2)	6.000 kg

On-road/Off-road: It applies to vehicles used mainly on road and partially off road (such as construction sites vehicles, winter vehicles, forestry vehicles etc).
Off-road: It applies to vehicles used mainly on difficult terrain.

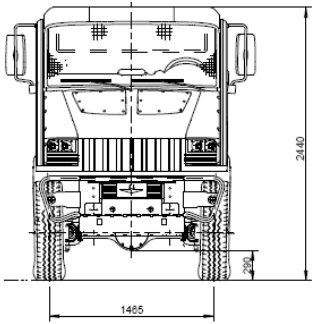
MAX AXLES WEIGHT

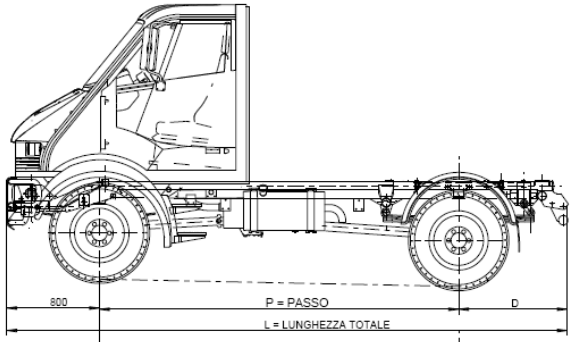
Model	Front axle	Rear axle
T-REX 35 Q	2.000 kg	2.500 kg
T-REX 60 Q	2.300 kg	4.450 kg

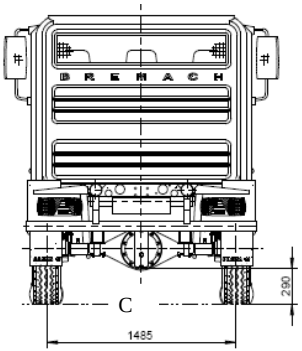
TOWABLE WEIGHT

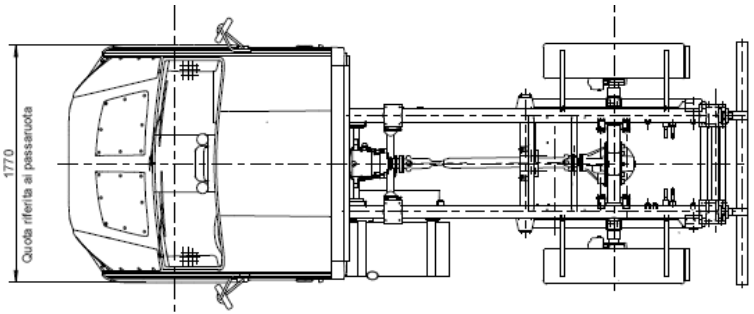
All road models: 3500 kg with overrun brake and 750 kg without trailer brake. Max drawbar load: 120 kg.
All offroad models: 1750 kg with overrun brake and 750 kg without trailer brake. Max drawbar load: 120 kg.

DIMENSIONS OF OFF-ROAD T-REX MODEL









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	STANDARD OFF-ROAD T-REX				
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Dimensions	N1/N2	N1/N2	N2	N2	C
Wheelbase=P	2600	3100	3450		1480
Total length=L	4380	4880	5230		
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T-REX 60 Q (N2)	6.000 kg

On-road/Off-road: It applies to vehicles used mainly on road and partially off road (such as construction sites vehicles, winter vehicles, forestry vehicles etc).

Off-road: It applies to vehicles used mainly on difficult terrain (for example long trips etc), considering the ratio axle weight/tyre size to reach optimal off-road adaptability.

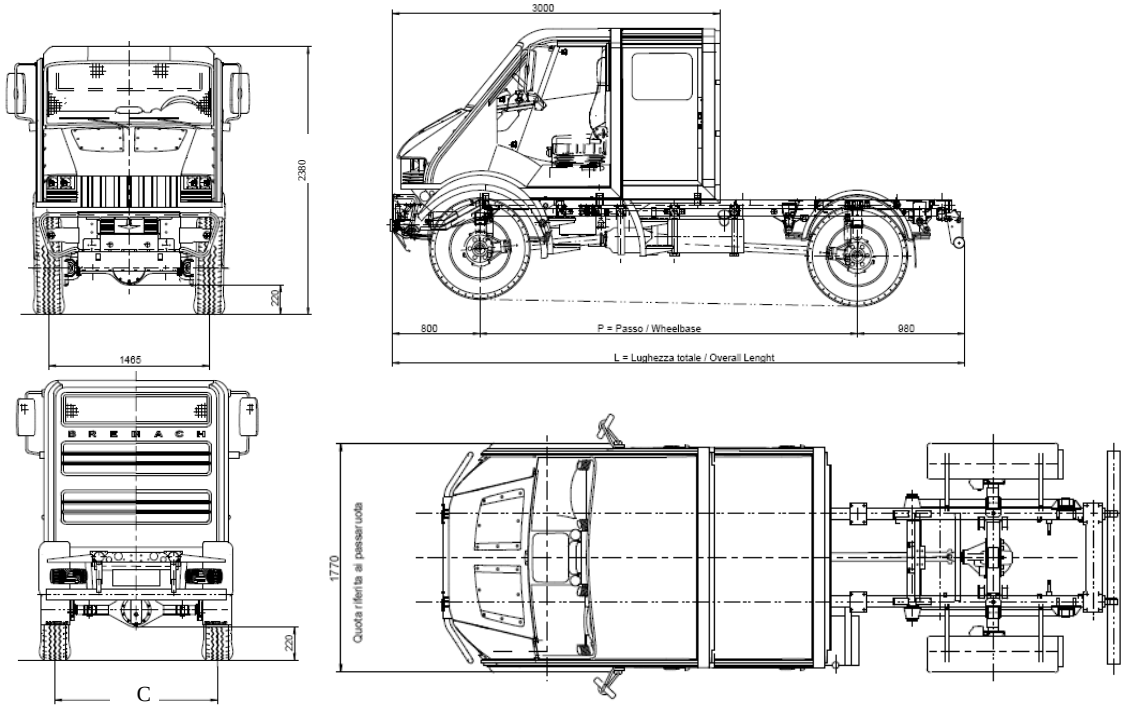
MAX AXLES WEIGHT

Model	Front axle	Rear axle
T-REX 35 Q	2.000 kg	2.500 kg
T-REX 60 Q	2.300 kg	4.200 kg

TOWABLE WEIGHT

All road models: 3500 kg with overrun brake and 750 kg without trailer brake. Max drawbar load: 120 kg.
All offroad models: 1750 kg with overrun brake and 750 kg without trailer brake. Max drawbar load: 120 kg.

DIMENSIONS OF ON-ROAD DOUBLE CAB T-REX MODEL



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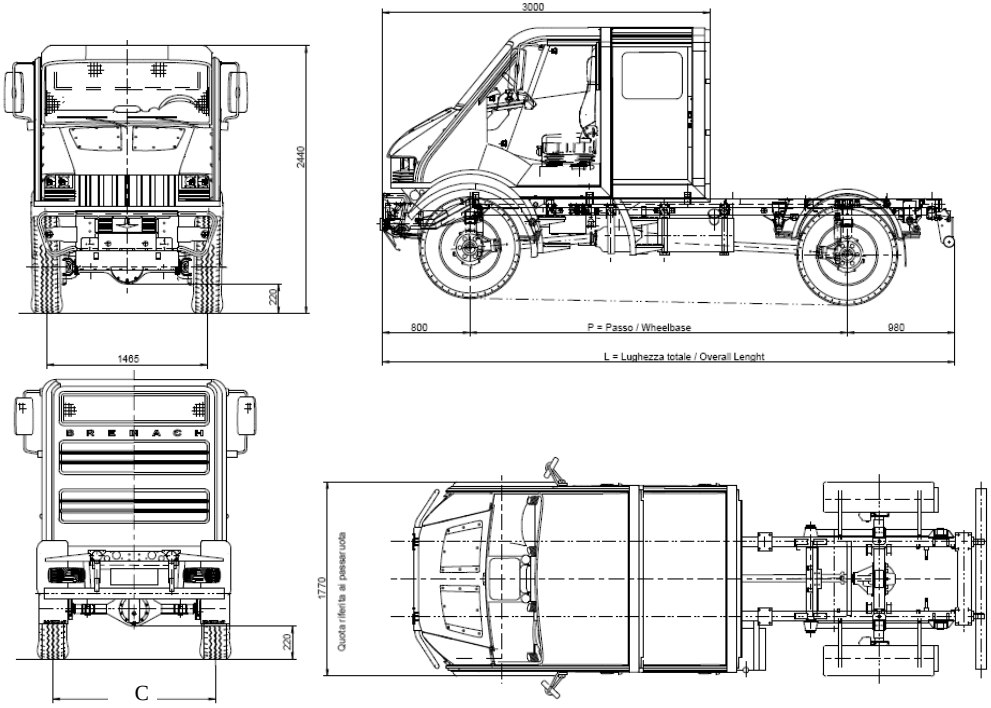
DIMENSIONS OF OFF-ROAD T-REX DOUBLE CAB MODEL



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Model	Front axle	Rear axle
T-REX 35 Q	2.000 kg	2.500 kg
T-REX 60 Q	2.300 kg	4.450 kg

TOWABLE WEIGHT

All road models: 3500 kg with overrun brake and 750 kg without trailer brake. Max drawbar load: 120 kg.
All offroad models: 1750 kg with overrun brake and 750 kg without trailer brake. Max drawbar load: 120 kg.

TABLE OF BK FEATURES

BK "SLOW"		BK "FAST"	
STD		OPT	
Low Gear High Gear	1:1,028 1:3,086	Low Gear High Gear	1:1,298 1:3,894

VEHICLE CONTROL

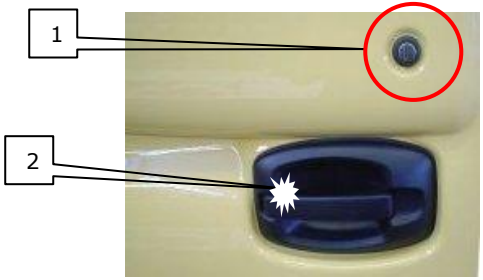
VEHICLE KEY

Your vehicle has a key pair, both for door opening (also with remote control) and ignition.
If the remote control doesn't work, use the key to open the door.

Remote control with key

DOOR LOCK

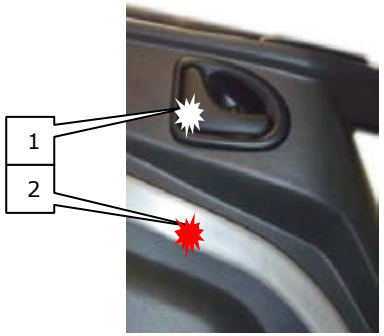
Both doors are provided with their own key lock.
1: Lock
2: Door handle.



Door lock

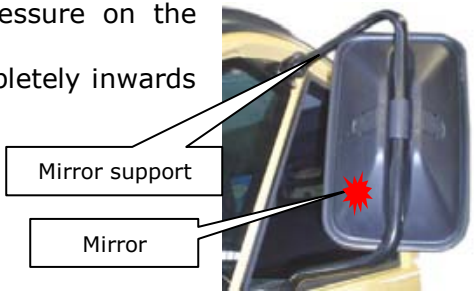
DOORS

When opening the door the internal lamp lights up automatically.
1 Internal door handle.
2 Handrail.



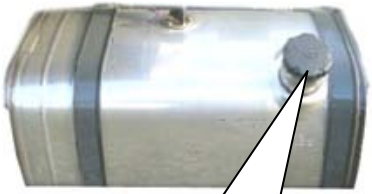
SIDE MIRRORS

The side mirrors are adjusted by hand, with slight pressure on the mirror body.
The mirror supports are hinged; they can be turned completely inwards towards the cab if necessary in case of narrow roads.



FUEL TANK

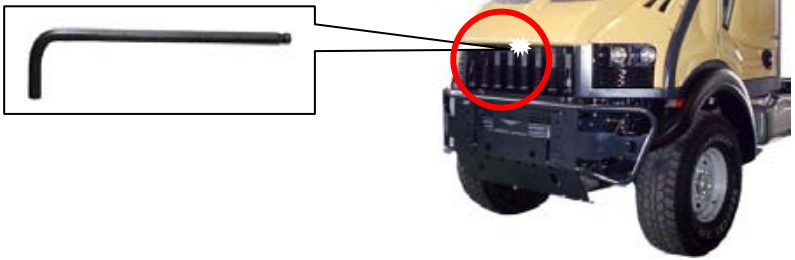
The standard fuel tank has a capacity of 70 liters and is placed on the left side of the vehicle. As option a bigger tank with a capacity of 140 liters could be added.
The optional tank is placed on the right side vehicle. The fuel is pumped from the right tank to the left one by an electric pump. Upon request the fuel tank plug can be provided with key lock .
Use only diesel fuel (Minimum cetane number 48).



Tank cap with key lock (optional)

ENGINE BONNET

The bonnet can be opened and disassembled from the vehicle using the hexagonal key supplied with the vehicle



SEATS

SEAT REGULATION

Lift the handle to unlock the seat and move it forward and backward. Release the handle to fix the seat in the required position.

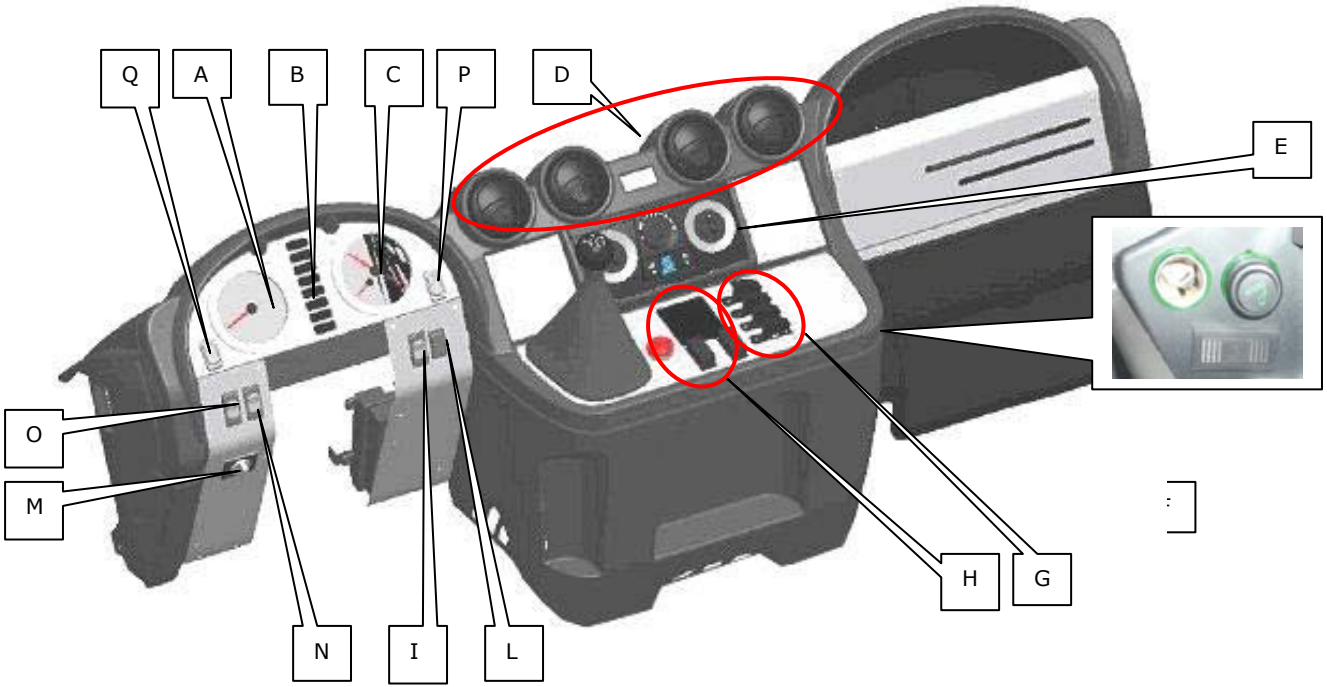
FURTHER SEAT REGULATIONS

From the left: lift the lever (1) to change the height/angle of the front part of the seat. Lift the lever (2) to change the height/angle of the back part of the seat. Use the lever (3) to adjust the backrest. Rotate the knob (4) to adjust the seat suspension according to the driver's weight (upon request fro the passenger seat).

SEAT CLEANING

The seat should be cleaned with dry-foams or other suitable product.

STANDARD DASHBOARD CONTROLS.

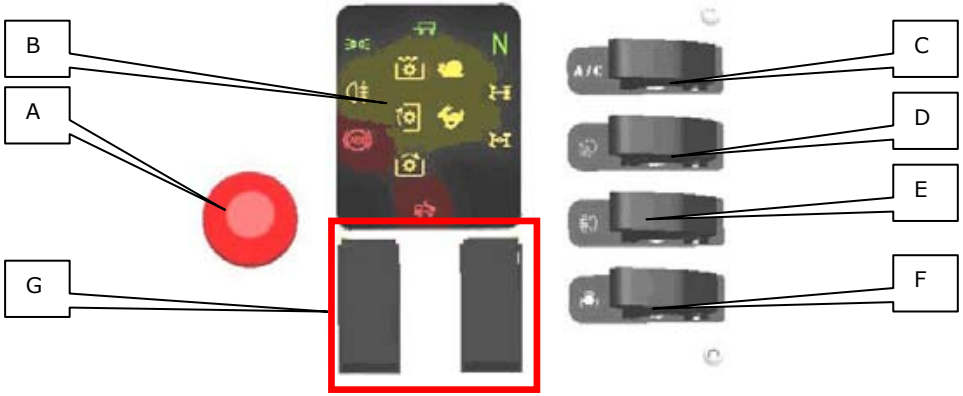


Standard dashboard

A: Rev counter.
B: Control light.
C: Tachometer, speedometer, fuel level and engine temperature.
D: Air vents
E: Air-conditioner controls module.
F: Electric socket (12 Volt) + lighter.
G: Switches (see following details).
H: Emergency button and windows control (see following detail).
I: ABS disable button.
L: ABS disable light.
M: Headlight height adjustment
N: Gearbox PTO engagement switch
O: Tipper switch.
P: EDC/Preheater malfunction light.
Q: OBD diagnosis/DPF regeneration light.

HEADLIGHT HEIGHT ADJUSTMENT

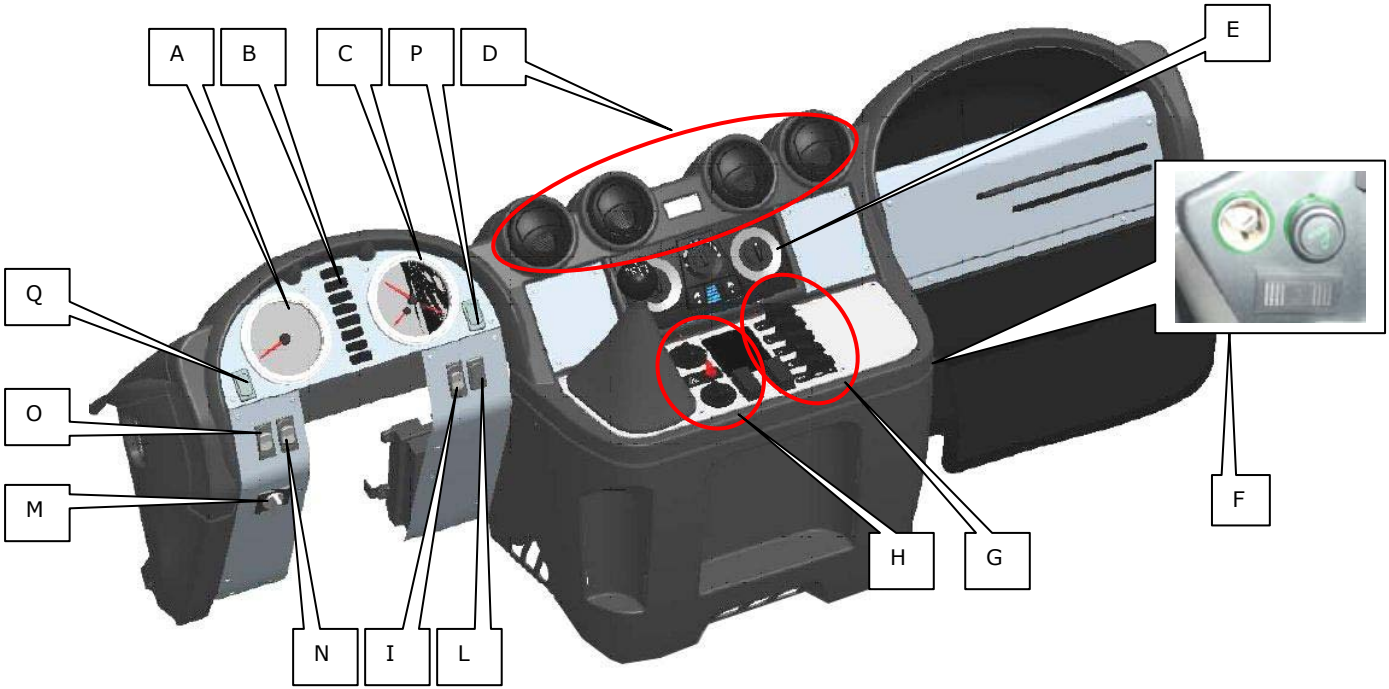
Adjusting the potentiometer (M) the headlights can be adjusted according to the vehicle loading conditions.
Position Ø: Normal position (the headlights are in the upper position).
Position 1-3: Headlight downward adjustment according to the load conditions, to avoid blinding the oncoming vehicles.



Console controls related to H and G positions on standard dashboard

A: Emergency flash light button.
B: Pilot lights (see following details).
C: A/C switch.
D: Work lamp switch.
E: Fog light switch.
F: PTO switch.
G: Electric windows switch.

"OPTIONAL" DASHBOARD CONTROLS



"Optional" dashboard

A: Rev counter.
B: Control lights.
C: Tachometer, speedometer, fuel level and engine temperature.
D: Air vents.
E: Air-conditioner controls module.
F: Electric socket (12 Volt) + lighter.
G: Switches (see following details).
H: Pilot lights and buttons (see following details).
I: ABS disable button.
L: ABS disable light.
M: Headlight height adjustment.
N: Gearbox PTO engagement switch.
O: Tipper switch.
P: EDC/Preheater malfunction light.
Q: OBD diagnosis/DPF regeneration light.

HEADLIGHT HEIGHT ADJUSTMENT

Adjusting the potentiometer (M) the headlights can be adjusted according to the vehicle loading conditions.
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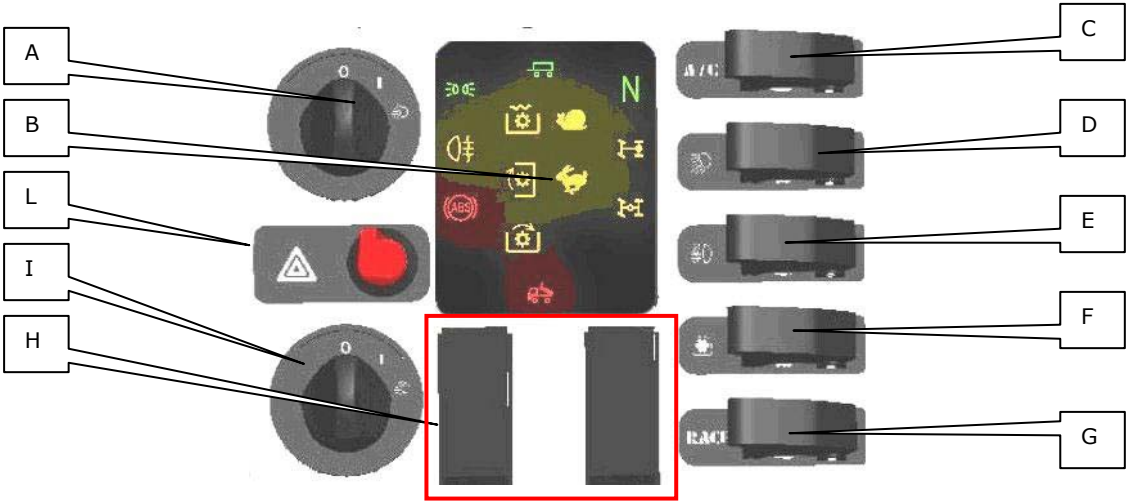
Position 1-3: Headlight downward adjustment according to the load conditions, to avoid blinding the oncoming vehicles.



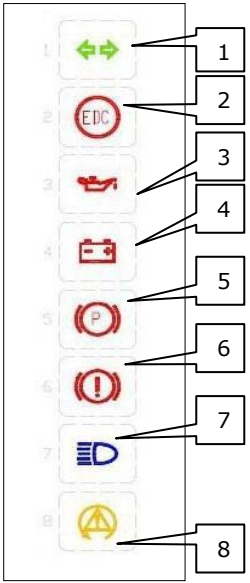
Console controls related to H and G positions on "optional" dashboard

A: Low speed engage/disengage control.
B: Pilot lights (see following details).
C: A/C switch.
D: Work lamp switch.
E: Fog light switch.
F: PTO switch.
G: Central diff.lock security disable
H: Electric windows switch.
I: Differentials lock control.

L: Emergency flash light button.

PILOT LIGHTS

1. Direction indicators.
2: EDC engine.
3: Low pressure of engine oil.
4: No alternator charge.
5: Park brake.
6: Brake oil level and brake pads wear.
7: Headlights.
8: General breakdown.

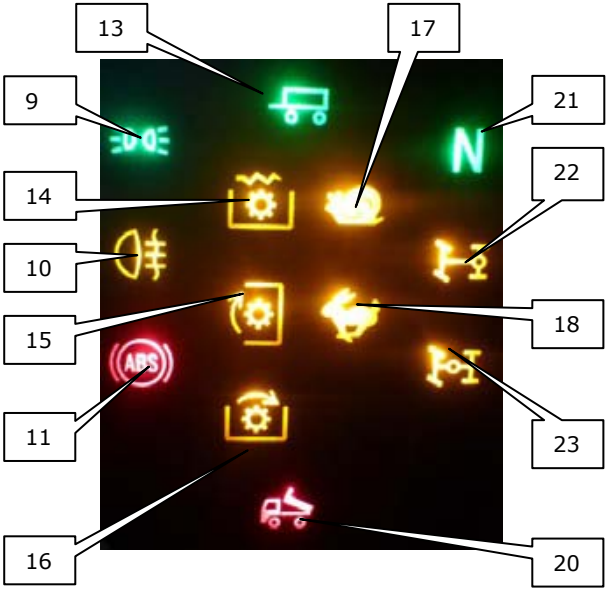


Console B position pilot lights

9: Headlight.
10: Rear fog light.
11: ABS malfunction.
13: Tow direction indicators.
14: Electromagnetic PTO.
15: Transfer box PTO.
16: Gearbox PTO.

17: Low speed.
18: High speed.
20: Tipper.
21: Transfer box neutral.

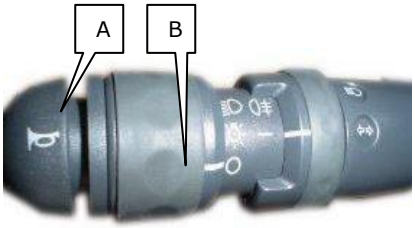
22: Rear differential lock.
23: Central differential lock.



Pilot lights in position B in console H position

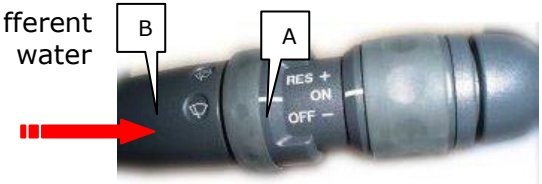
COLUMN SWITCH

Left switch: the horn is activated pushing the A knob. Rotating the B selector, at the first step headlamps are activated, at the second step the headlights are activated.
Move forward the lever to switch on high beams.
Move upwards and downwards the lever to activate the direction indicators.



Left column switch

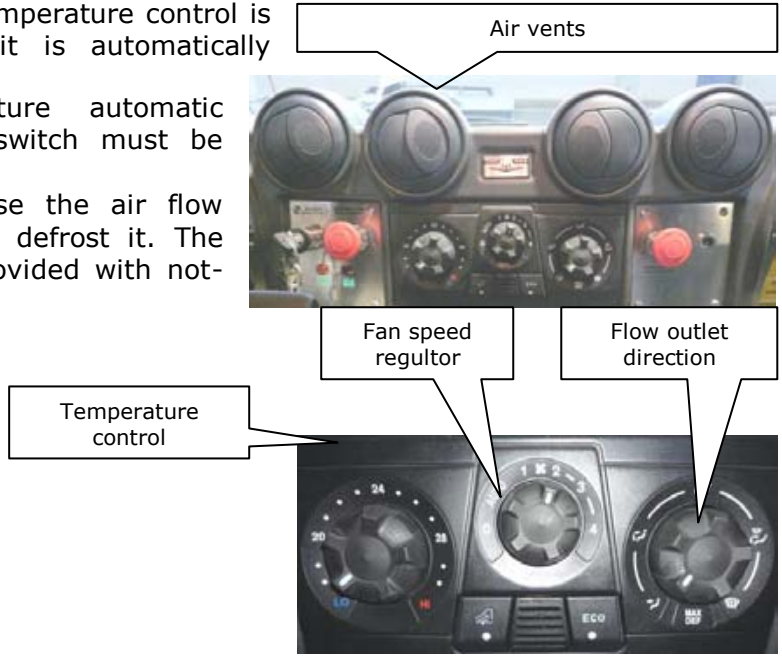
Right switch: it has the function to activate the different windshield speeds A and if pushed to activate water sprinkler B.



Right column switch

HEATING AND VENTILATION

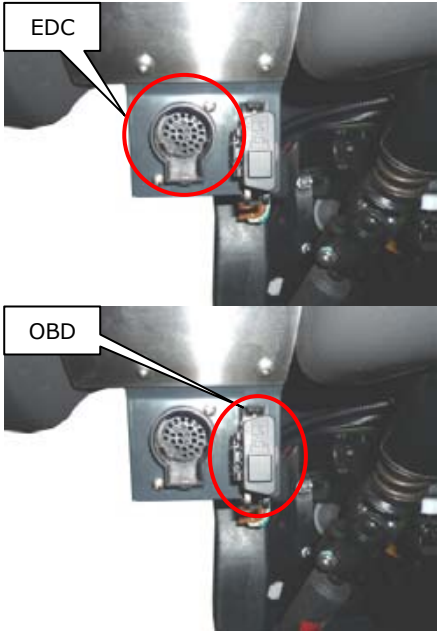
The temperature set with the temperature control is measured by a sensor and it is automatically adjusted. For the temperature automatic adjustment, the fan selector switch must be turned on.
Close the air vents to increase the air flow towards the windshield to help defrost it. The lower part of the console is provided with not-adjustable air vents.



Heating and ventilation console

PLUG FOR ON-BOARD DIAGNOSIS (EDC -OBC)

The plug for On-Board diagnosis is available on the left side inside the cab; with appropriate hardware and software it is possible to read the engine unit error codes.



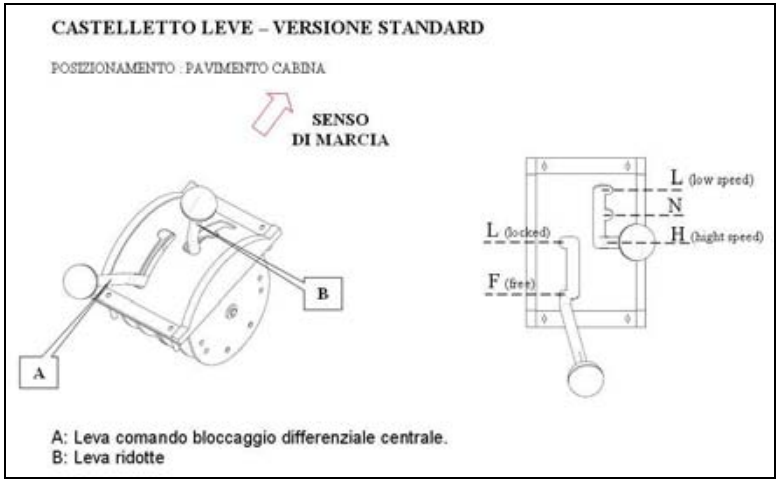
Plug for OBD and EDC diagnosis

PLUG FOR ON BOARD DIAGNOSIS (OBD)

The plug for On-Board diagnosis is available on the left side inside the cab; with appropriate hardware and software it is possible to read the engine unit error codes.

CONTROLS / DRIVES

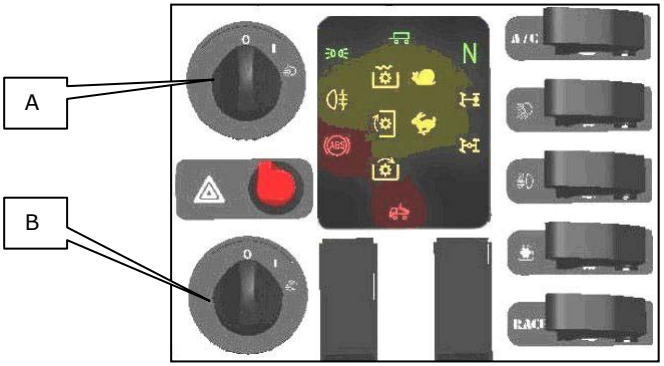
CONTROLS - DRIVES



Standard drive levers (L-H speeds and central diff.lock)

CONTROLS – OPTIONAL MODEL

A: H-L speed control.
B: Central differential lock control



"Optional" console positions H and G

TRANSFER BOX CONTROL

It is possible to shift between road/offroad not synchronized ratios (A) and, only where available (with Bowden control), it is possible to select a synchronized split gear.
It is possible to shift the split unit while driving, after depressing completely the clutch pedal and independently from the selected gear on the gearbox or the road/offroad ratio. In case of heavy load or if you have a trailer it is always suggested to start with the split unit in Low speed to safeguard the clutch. This in fact allows to reduce the stress on the vehicle clutch.

WARNING To avoid difficult shifting with low temperature, shift the split gear only after driving at least 5-10 km.
WARNING: All the transfer box ratios must be selected only after depressing completely the clutch pedal.
The road/offroad ratios (A) must be engaged only with stationary vehicle! The offroad ratio is used to reduce the speed and at the same to increase the wheel torque to ground.
Between the road/offroad (A) is available a neutral position, useful to engage transfer box PTO, available as option, with stationary vehicle.
WARNING: Switching (A) may cause some problems if the driving shafts are loaded. In this case move a little bit the vehicle backward, to reduce the load or release the clutch pedal before trying again.
The vehicle is equipped with permanent four wheel drive. It means that all the four wheels are driven. The planetary gears central differential inside the transfer box compensates the rpm difference between front and rear axles when cornering. With "open" differential the total torque is splitted 35%/65% between front/rear axles. If the central differential is "open" and one wheel loses traction force (because lifted from the ground or because without enough grip on ice or snow etc) the vehicle is unable to proceed. To avoid this, the central differential is equipped with a locking device.
The central differential lock can be engaged with the switch (B). In this way the front axle is directly connected to the rear axle and the cardans can rotate at the same speed.

However, when cornering, the speed difference between front and rear axles cannot be compensated, with the result of too high stress on the driving shafts with concrete ground and bends. According to this, the engagement of the central locking device should happen only on slippery grounds (for example snow, ice etc) and/or rough terrain. The central lock must be engaged only with stationary vehicle; when engaged on the console the lamp „Central differential locking device" lights up.
WARNING: The disengagement of the central differential lock while the driving shafts are stressed may cause problems. In this case move the vehicle a little bit backwards, to reduce the stress, or drive "straight ahead" for long time and simultaneously engage the locking device.

AXLE DIFFERENTIAL CONTROL

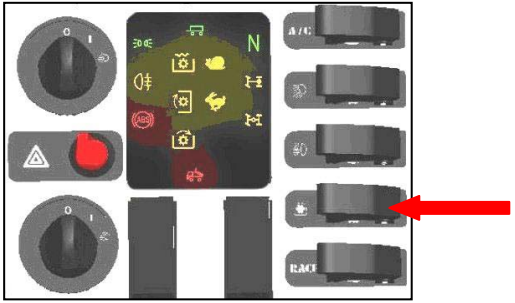
As standard the vehicle is equipped with a self-locking rear axle differential, able to respond automatically to ground conditions without any control by the driver; this device is available as option also for the front axle.
In the models where the traditional differential locking device is fitted (check with BREMACH Technical Office) the device is controlled with the switch (B). Engage the locking device only with stationary vehicle; when engaged on the console the lamp „Rear differential locking device" lights up, and an audible alarm is triggered.
The engagement of the differential lock increases the traction force on the rear axle, but when cornering the speed difference between the two wheels of the locked axle cannot be compensated; According to this, steering is more difficult and the driveline system is more stressed.

So it is suggested to engage the rear differential lock only for the time necessary to go out of the impasse.
Further information about gearbox, transfer box and differential locking device is available in our „Offroad use instructions".

GEARBOX POWER TAKE OFF CONTROL

The power take off must be engaged only with stationary vehicle.

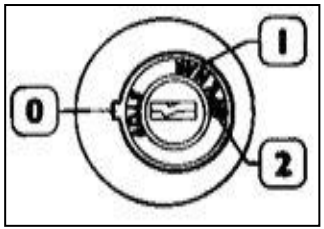
- Depress the clutch pedal, set the gearbox shift lever on neutral and switch on the control indicated by the arrow.
- Release the clutch pedal. To change the PTO rpm, change the engine rpm.



Control levers

START AND DRIVE

ENGINE START



Put the ignition key in the ignition lock.
WARNING: After removing the key and turning the steering wheel, the ignition lock is locked. To unlock it put the key in the ignition lock, slightly turn the steering wheel and turn the key.
After turning the ignition key to position (1) „MAR" (DRIVE) of the ignition lock the following pilot lights turn on:

- Console: „Oil pressure" and „Charge control".
- Dashboard: the light „Water in diesel oil" lights up for approx 5 sec.
- The light „Pre-heating" lights up for approx. 2 sec.
- The pilot light „OBD and EDC" lights up for approx 5 sec. and performs a system control.

WARNING: The electric fuel delivery pump starts for approx. 10 seconds, on condition that you keep the ignition key in position (1) „MAR" for at least that time, otherwise it will stop and you'll have to repeat.
At the end of the pre-heating process and/or system control, the lights „Pre-heating", „OBD and EDC" will be slightly lighted, indicating their operational stand-by condition.

- Depress the clutch pedal completely.
- Turning the ignition key to position (2) „AVV" the engine starts. After engine start release the key, that will automatically return to position (1) „MAR".

WARNING: The ignition lock is provided with a start lock, in order to prevent "restarting" of already running engine. To „restart" you must first return the key to position (Ø). Doing this never depress the gas pedal! (If not respected, at the engine start black smoke is emitted).
If engine does not start immediately, never activate the starter for more than 30 seconds.
Once the engine has started, move slowly and keep the engine at intermediate rpm range, so that it can rapidly reach the optimal running temperature.
This procedure allows obtaining the following:

- Regular oil flow inside the lubrication circuit.
- The flue gas values are within the limit values allowed.
- Low fuel consumption.

WARNING: When the engine is cold you are advised to idle it for quite a long time in order to reach a better "regular running". Otherwise you only increase the emissions of noxious substances in the fuel gas!

COLD START

If temperature is over 10 °C you can start the engine immediately. If temperature is below 10 °C the light "Pre-heating" turns on the dashboard.

- Wait until the light goes off and then start the engine. After the engine has started the light may turn on again, in order to reduce the generation of „white smoke" with very low outer temperature.

HOT START

If temperature is over 10 °C or at a normal running value you can start the engine immediately.

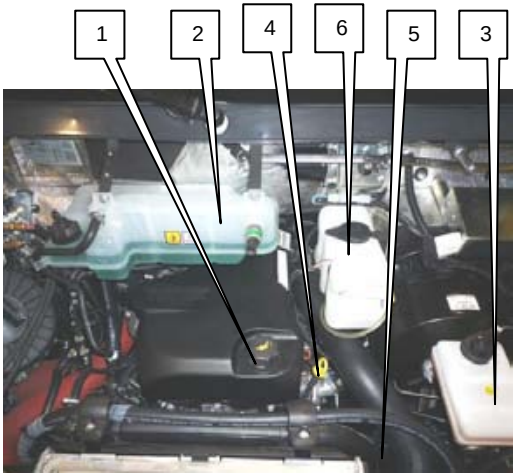
ENGINE SHUT OFF

To shut down the engine turn the ignition key to position (Ø). Note: If the engine has been significantly stressed, run it for approx. 30 seconds stationary with minimum rpm before shutting it down.

Q= Daily.
S= Quickly.

Check:

- Engine oil level.
- Check oil dipstick (4). The oil level must be between the „MIN" and „MAX" marks.
- Top up through the oil cap (1).



Engine F1A E4

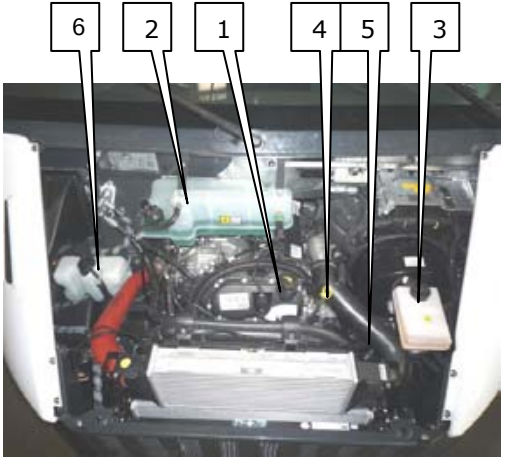
- Coolant in the compensation tank (2). Top up with coolant if necessary.
- Brake fluid in the tank (3).
- Power steering oil in the tank (5).
- Windscreen wiper fluid in the tank (6).
- Condition and air pressure of the tyres.
- Brake system and park brake.
- Functioning of lighting system, direction indicators, windshield wipers.

NOTE: In case of off-road drive the engine oil level must be at the "MAX" mark of the oil dipstick, to guarantee sufficient engine lubrication also in case of high

slopes. The oil level in the power steering tank (5) must be between the „MIN" and „MAX" marks of the oil dipstick included in the closure cap.

ENGINE F1C E5

Check:
- Engine oil level.
- Check oil dipstick (4). The oil level must be between the „MIN" and „MAX" marks.
- Top up through the oil cap (1).
- Coolant in the compensation tank (2). Top up with coolant if necessary.
- Brake fluid in the tank (3).
- Power steering oil in the tank (5).
- Windscreen wiper fluid in the tank (6).
- Condition and air pressure of the tyres.



Engine F1C E5

- Brake system and park brake.
- Functioning of lighting system, direction indicators, windshield wipers.

NOTE In case of off-road drive the engine oil level must be at the "MAX" mark of the oil dipstick, to guarantee sufficient engine lubrication also in case of high

slopes. The oil level in the power steering tank (5) must be between the „MIN" and „MAX" marks of the oil dipstick included in the closure cap.
WARNING: Check oil level only when the engine is not running.

REPLACEMENT OF THE AIR FILTER ENGINE F1A E4

To replace the air filter
- Open the 3 latches (*) of the air filter body
- Remove the cover and the filter cartridge. The replacement schedule is reported in the maintenance manual.

WARNING: During the re-assembly of the cover on the body make absolutely sure that the gasket is properly seated in place.

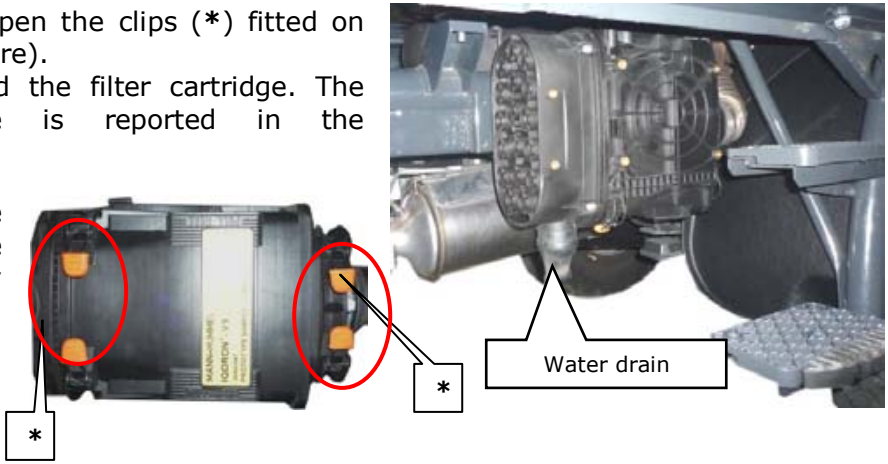
Engine F1A E4 air filter

REPLACEMENT OF THE AIR FILTER ENGINE F1C E5

To replace the air filter open the clips (*) fitted on the bottom side (see picture).

- Remove the cover and the filter cartridge. The replacement schedule is reported in the maintenance manual.

WARNING: During the re-assembly of the cover on the body make absolutely sure that the gasket is properly seated in place.

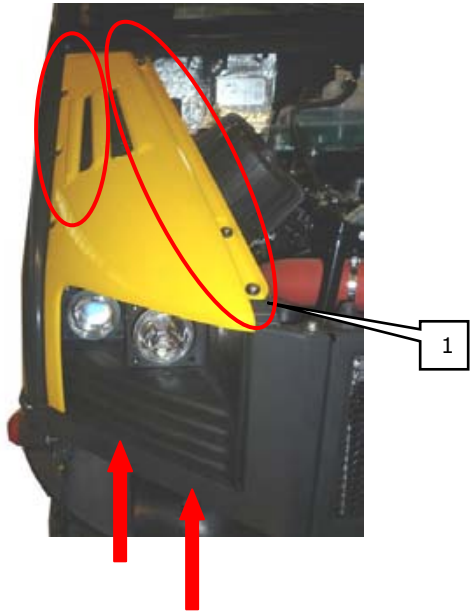


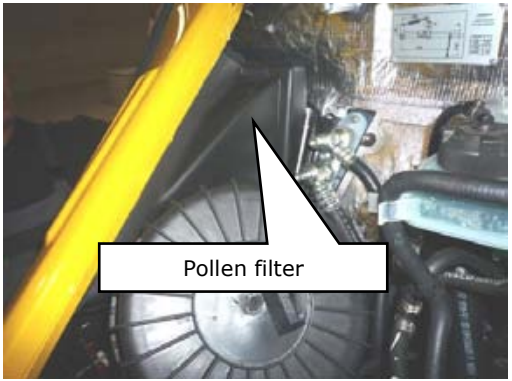
Engine F1C E5 air filter

CAB POLLEN FILTER

The pollen filter is placed on the right side inside the engine compartment. The filter model is the same for E4 and E5 vehicles. To replace the pollen filter the side bonnet panel must be removed. Undo the screws to remove the complete support, disassemble

the filter and replace it with a new original spare part provided by the BREMACH service. In the picture the filter support is showed.
In the picture here below are showed the screws to undo to remove the complete filter support (1). The screws indicated with the arrows are fitted in the inner side below the headlights group.





Pollen filter position

SNORKEL PRE-FILTER

In case of vehicles with centrifugal pre-filter (snorkel) the separation tank must be emptied regularly and/or according to the pollution of dust and sand.

Snorkel pre-filter

WINDSHIELD WIPER TANK

Windshield wiper system tank (1)
It should be always filled up with approx 50% antifreeze fluid and 50% water.

Windshield wiper tank

NOTE

A. The coolant temperature under normal running conditions is about 85-90 °C. According to the outer temperature and the driving mode the temperature may rise up to 95 °C. When the cooling fluid temperature reaches approx. 95 °C the radiator fan starts automatically and the coolant temperature is reduced to 85-90 °C. In suitably equipped vehicles this operation may also be manual, in order to keep the coolant at a constant temperature of 85 °C. If the coolant temperature is too high (> 100 °C) a pilot lamp „Coolant temperature too high" turns on in the console. In this case stop your vehicle

immediately and run the engine for 2-3 minutes at idle rpm with stationary vehicle, then shut it down and contact the closer service office.

B. The „oil pressure" indicator light  turns on when the ignition system starts and turns off once the ignition is completed. If it turns on when you are driving, shut down the engine immediately and contact an authorized service workshop to identify and remove the fault, before continuing to drive.

C. The „Brake fluid" indicator light  indicates a lack of brake fluid due to pads wear or to a damage in the braking system (for example a leak of brake fluid connected with a very long pedal stroke). In this case contact an authorized workshop immediately. The double braking circuit system allows you to continue driving, but consider that the braking effect is significantly reduced and the pedal stroke is much longer than usual.

D. The „Park brake" indicator light  turns on when the park brake is put on and turns off when the park brake is released.

E. The „Charge check" indicator light  indicator turns on when the ignition system starts and turns off once the ignition is completed and with an rpm ratio higher than rpm at idle speed. If it turns on while driving, it warns that the battery is not charged (for example a V-belt is broken). Check the malfunctioning in an authorized service workshop.

F. If the „Water in diesel oil" pilot light turns on while the engine is running, you should discharge the water in the diesel oil filter immediately from the discharge screw under the filter. Before doing this operation remember to disconnect the plug of the water sensor. Note: The plug is provided with a safety anti-shake system that is released by pressing the metal bar.

G. The „Low fuel" pilot light turns on when about 15 liters (70 l tank) and/or 25-30 liters (130-150 l tank) respectively are left in the tank. When driving along slopes with over 20% slope the fuel indicator should be at least in the green area to prevent stopping of fuel feeding.

WARNING: If the vehicle remains stationary for long time (at least for 2 weeks) the fuel tank and/or tanks should be left full in order to avoid the formation of water condensation.

H. If you have to "empty" the fuel tank or the entire fuel system (for example when you have to replace the filter), you must first of all bleed the system: start the ignition, the ignition key is in position (1) „MAR". The electric fuel delivery pump starts and then turns off again after approx. 10 seconds. Turn off the ignition and wait for about 10 seconds (during this time data are saved in the engine unit). Start the ignition again and repeat the entire procedure twice. Then you can start the engine.

WARNING: Never try to start the engine without following this bleeding procedure. The fuel present in the system may damage the high pressure pump because of lack of lubrication.

Also never "drag" the vehicle because of lack of current.

I. The „OBD and EDC pilot lights“ , after starting the ignition system, check the fuel gas system and injection for about 5 seconds. If one or both pilot lights turn on while driving, contact the closest FPT service workshop.

WARNING: The pilot light may turn on also because of a power drop in the engine.

MALFUNCTIONING INSPECTION THROUGH EDC/OBD PILOT LIGHTS (DIAGNOSTIC)

The EDC pilot light  (placed in the console) displays information about injection system malfunctioning. It the pilot light turns on during normal running condition, it means a malfunctioning, such as.

MALFUNCTIONING TABLE

Pilot light OFF	Normal running	
Pilot light ON	Reduced system functionality	Proceed with caution and contact the closer service workshop.
Pilot light FLASHING	Limited injection system functionality and/or one or more safety functions not working, the engine may run only in emergency mode (60% of power)	Park the vehicle along the roadside. Contact your BREMACH sales office to to the vehicle to a service workshop.

DIAGNOSIS

Upon request you may receive an OBD Tester for your vehicle, that allows you to read through the OBD2 connector mounted on the vehicle the error messages displayed in the injection system.
It allows you:

A. to identify the malfunctioning displayed.
B. to send it to a customer service point of FPT or IVECO
C. to eliminate on your own the fault displayed with the help of the workshop manual (available upon request).

DPF REGENERATION MALFUNCTIONING INSPECTION (PILOT LIGHT).

The DPF light  displays information about regeneration malfunctions.
If the DPF light turns on during normal running conditions, it means a malfunctioning.

In normal usage conditions of engine/vehicle, spontaneous regeneration cycles of the DPF are expected, without the intervention of the user. The necessary conditions for the vehicle to ensure the spontaneous regeneration of the DPF are:

- Exhaust gas temperature over 550° for at least 20 minutes.

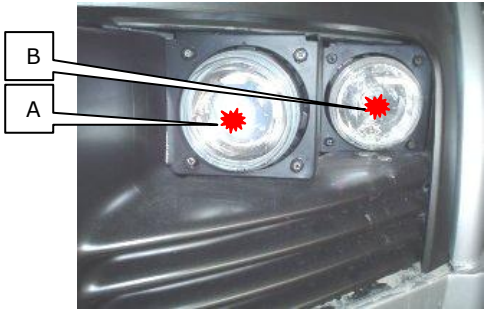
The spontaneous regeneration is not carried out in conditions such as:

- The engine runs at idle for long periods of time.
- The vehicle runs continuously at low speed.
- The engine/vehicle is stopped very often.
- All other conditions able to keep exhaust gas temperature below the limit or for shorter time.
- The pilot light on the console will indicate the possible occurrence of the problem (OBD/FAP).
- The vehicle user will have to drive so as to create the right conditions for the spontaneous regeneration (for example drive on high speed roads/highways).
- If the drive mission, however, does not allow the spontaneous regeneration, due to the gradual clogging of the DPF the engine control unit will automatically limit the power of the engine, thereby requiring the intervention at the service workshop to make a forced regeneration.

LIGHTS

HEADLAMPS

Front light assembly units contain:
- Dipped beams A.
- High beams B.
- E5 vehicle has Polyellipsoid lights.



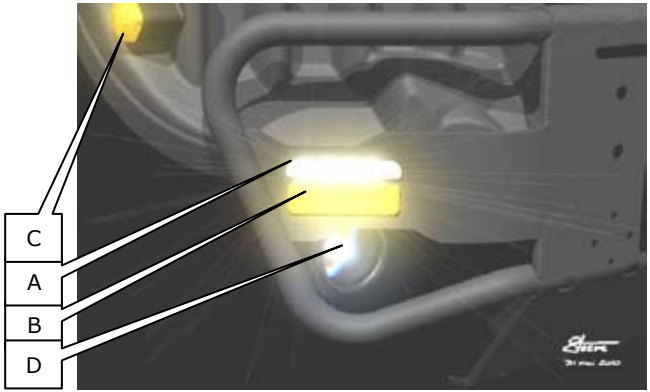
Front lights group

SUBSTITUTE THE ALOGEN DIPPED/HIGH BEAMS

Make sure that the headlamps and the ignitions are off.
- Loosen up the fixing bolts of the light unit remove the unit and substitute the light bulb.

IMPORTANT: Never touch the light bulb glass since by doing so you could damages it.

Front light assembly unit contains:
- Parking LED lights(A).
- Direction indicator LED lights (B).
- Halogen side indicator (C).
- Fog light (OPT) (D).



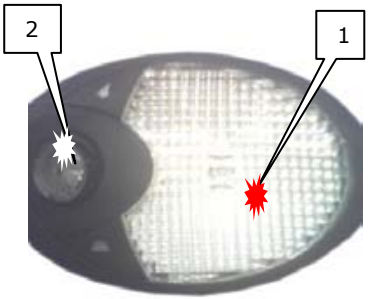
Front light assembly unit

SUBSTITUTE SIDE INDICATOR (C)

Make sure that the ignition is off:
- Remove gently the light housing, and then the light bulb from the housing and proceed with the substitution.
- Position the housing back in place.

INTERIOR LIGHT

Side interior light, pressure mount (cylinder light bulb, 5 Watt ceiling).
Switch: press on the transparent acrylic glass to switch the light on/off.
When driver or passenger doors are open, the interior light goes on.



Interior light

READING (OPTIONAL)

Interior central light (1) pressure mount 2 x 5 W ceiling.
To substitute the light bulbs:
- Use the tip of a screwdriver to detach the glass from its bracket.

Reading light (2) bayonet mount, 4 W.
- Rotate counterclockwise the light bulb and pull it out to remove the light bulb; repeat in the reverse order to install the new light bulb.

REAR LH/RH LIGHT UNIT

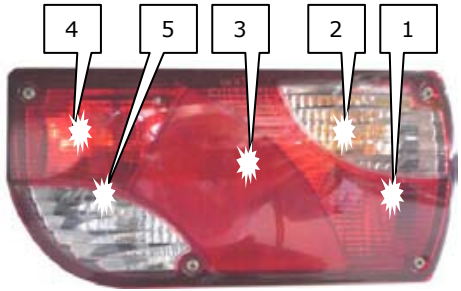
1 Brake 21 W light bulb bayonet mount.

2 Direction indicator 21 W light bulb bayonet mount.

3 Parking light 10 W light bulb bayonet mount.

4 Rear fog light 21 W light bulb bayonet mount.

5 Reverse gear light 21 W light bulb bayonet mount.



Rear light unit assembly

The light unit in the picture is the right hand one.
For the light bulb substitution:

- Undo the bolts that keep the transparent cover and inspect the gasket.
- Replace the light bulb with a working one with identical characteristics.
- Place the basket in the correct position, tighten the bolts without exceeding with the tightening torque.

Left hand light unit is identical to the RH one but with opposite position of the lights.

REGISTRATION PLATE LIGHT

To replace the light bulb of the light unit it is enough to turn the light bulb carrier from the rear plate and pull out the light unit assembly. Replace the light bulb with a working light bulb with identical characteristics and re-assemble the light bulb carrier.

Registration plate light assembly

WHEEL REPLACEMENT

Locate the vehicle toolkit and the jack under the passenger seat.

⚠ Pull the hand brake before lifting the vehicle and make sure that the vehicle cannot move in any direction (i.e. with a wedge).

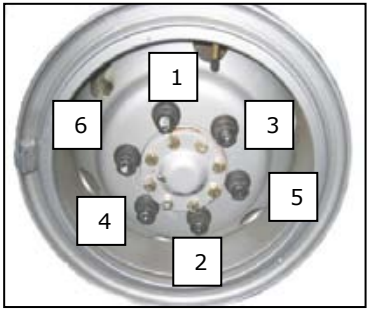
- Read carefully the instructions for the hydraulic jack.
- Lift the vehicle with the jack only by using the jack on the positions indicated in the picture. In case of soft soil place the jack on a stable surface, for instance use a wood plate of at least 5mm thickness or similar.

Hydraulic Jack position

- Partially undo the wheel nuts. Lift the vehicle, until when the interested wheel can freely rotate.
- Remove the wheel after undoing completely the 6 wheel nuts and replace the wheel.
- Lower the wheel on the floor and tighten the wheel nuts, proceed tightening first one nut and its opposite and then repeat with the other nuts as indicated in the following picture.
- Tightening torque for the wheel nuts: 200 Nm (20 kgm).

Suggestion: You can reach the right torque also by applying the hydraulic jack lever on the socket spanner SW27 from the vehicle toolkit.

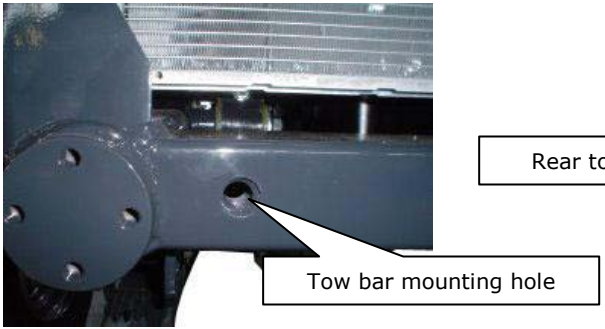
Important Note:
Within the next 50 Km after replacing a wheel, make sure that the tightening torque of the wheel nuts is correct 200 Nm 20 kgm.



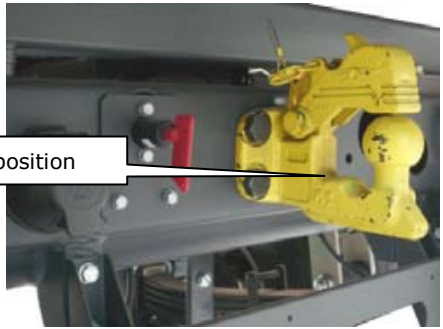
Wheel nuts tightening order

TOWING

You vehicle is equipped with a mounting hole which can be used to install a tow hitch on the front and a second hole for a tow hitch on the rear of the vehicle.



Front tow bar position



Rear tow bar position

IMPORTANT: Respect the following indications if your vehicle has to be towed.
If the engine is malfunctioning:

- Position the ignition key on the position labelled „MAR", doing so will avoid the steering lock.

WARNING: When the engine is off, there is also no power steering and no power braking, thus it is required to apply a considerable amount of force to steer and to brake.
If the semi axle is malfunctioning:

- Keep the engine running so to have power steering and power braking.

In order to do so position the gear lever on neutral.
Malfunctioning clutch:

- Position the gear lever on neutral.

Malfunctioning gearbox:

- Keep the engine off and position the Road/Off-road gear lever on neutral. This will prevent the inner parts of the gearbox box and transfer box from being moved when the vehicle is towed.

Malfunctioning transfer box:

- Position the Road/Off-road gear lever on neutral. This will prevent the inner parts of the transfer box from being moved when the vehicle is towed.

Malfunctioning central differential:

- Remove the shafts going from the transfer box to the front and to the rear axle.

Malfunctioning rear axle:

- Remove the shaft going from the transfer box to the rear axle. Remove the axle shafts (LH and RH) plug the hub holes to prevent oil leakage (rubber disks can be used for this operation)

Malfunctioning front axle:

- Remove the shaft going from the transfer box to the front axle.

ENGINE MAINTENANCE

ENGINE MAINTENANCE TABLE

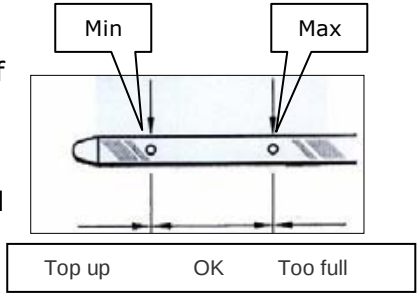
Engine model	IVECO F1A E4	IVECO F1C E5
Olio	**S** every 20.000 km	**S** every 30.000 km(**)
Oil filter	**S** every 20.000 km	**S** every 30.000 km
Air filter	**C/S** every 20.000 km	**C/S** every 30.000/60.000 km
Fuel filter	**S** every 10.000 km (*)	**S** every 40.000 km (*)
Fuel pre-filter	**C/S** every 20.000 km	**C/S** every 20.000 km
Belt	**S** every 120.000 km	**S** every 400.000 (chain)

C= Check S= Substitute. **C/S**= depending on dust/dirt level. **S** (**)= Reset to zero the DPF counter.

(*****) Every 5.000 km: Drain the fuel filter to get rid of condensation. If outside the EU gas station network, drain weekly.

WARNING: If the vehicle is used in rough conditions (especially off-road conditions) all maintenance intervals must be reduced by half!
More information can be obtained from the workshop manual or directly from the authorized BREMACH dealer.

If yearly mileage is smaller than the maintenance intervals listed above then oil and fuel filter changes must be performed once a year.

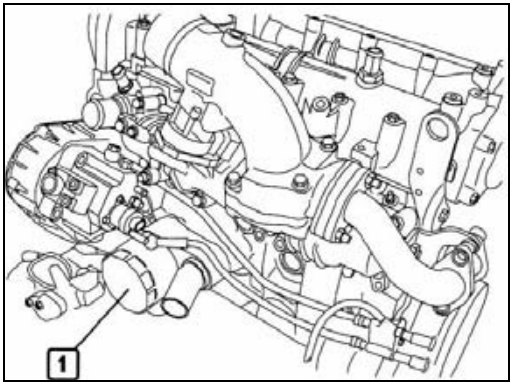


WARNING: check engine oil level few minutes after turning off the engine.

Check engine oil level :
- Pull out the dipstick, clean the stick with a piece of cloth and position it back into its housing.
- Pull out the dipstick again and check the oil level on the stick.

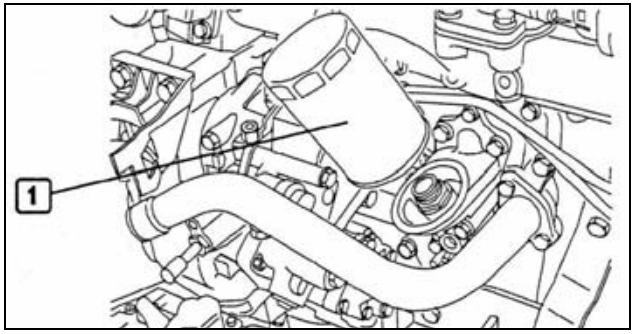
Oil level should be always up to the „MAX" notch. Quantity of oil between the „min" and „MAX" notch is approx.1,5 litres.
Oil specifications:
- SAE 10W/40 or SAE 5W30 ACEA A5B5 at least B3/E2-96 or API CH4/CG4.
- Oil quantity F1A: approx. 5,5 litres (including oil filter) and/or 4,8 litres (not considering oil filter).
- Oil quantity F1C: approx. 7,0 litres (including oil filter) and/or 6,5 litres (not considering oil filter).
- Drain plug: 12 mm hexagonal socket bolt.
- Oil filter type F1A: IVECO 2995811.
- Oil filter type F1C: IVECO 2995655.

- Air filter type IVECO 1903669 or Mann/Hummel for E5 F1C C 17337.



1= Oil filter.

Oil filter position on F1A Engine



Oil filter position on F1C Engine

DPF

F1C engines are equipped with self-cleaning DPF. Even though this kind of DPF is maintenance free, after every oil change the electronic counter of the filter must be reset to zero.

Proceed as follows if there is no possibility of using FPT computerized equipment:

- Turn the engine off and position the ignition key on „mar".
- Depress completely the accelerator pedal for at least 15 seconds. Simultaneously depress and release the brake pedal 10 times and then release the brake pedal.

DPF

- Position the ignition key on (Ø).
- Once the maximum allowed running time of the engine is reached, if the electronic DPF counter is not reset to zero, the control unit will reduce the engine output power.

WARNING: Contact an authorized dealer if if the vehicle has to be used in areas where the fuel sulphur is higher than 0,5%.

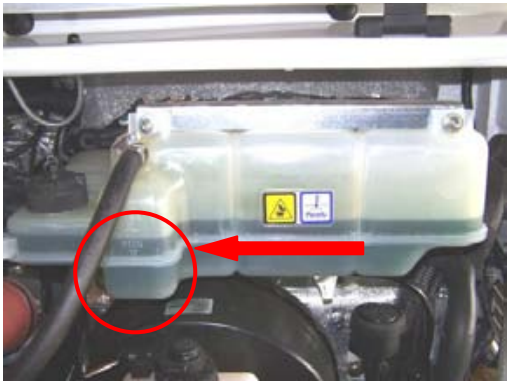
COOLING FLUID

COOLING LIQUID INSPECTION

The cooling liquid level should be between the "MIN" an "MAX" sign on the coolant tank when the engine is cold.
Undo the cap in order to be able to top up the level (see arrow in the picture).

WARNING: The cooling system will be pressurized if the engine is still hot. To avoid possible injuries undo the coolant cap only with a cold engine!

- Top up with a mix composed of 50% radiator anti-freeze (as per Spec. SAE J1034) and water, this should prevent freezing up to -35 °C.



Cooling liquid tank

Use this mixture all year round to avoid corrosion to the system. The cooling liquid should be changed every 3 years.

- Quantity: approx. 11 litres

WARNING: If the level is considerably decreased it has to be assumed that there is a loss or an overheating. Contact the authorized workshop for inspection.

GEARBOX

Gearbox ZF 6S-300/400, completely synchronized, 6 gears plus 1 reverse.
Every 20.000 km (400 h)

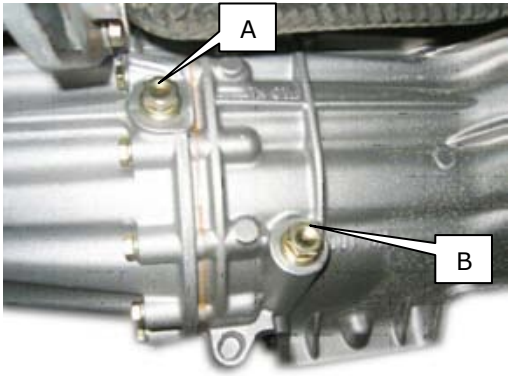
- Verify the oil level; oil level should reach the bolt (A) in the picture.

Every 40.000 km (800 h) substitute the oil in the gearbox.

- Drain all the oil through the drain screw (figure B).

Oil specification:

- SAE 75W/90 GL 4/5 or 85W/90 GL4.
- Oil quantity: approx. 3,0 litres
- Drain screw: SW 17 mm



"Oil change" area

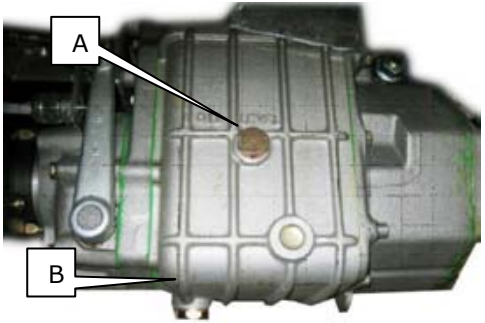
WARNING: Do not dispose of the oil in the environment, take the oil to the authorized dealer/workshop.

TRANSFER BOX

Every 15.000 km (600 h):
- Inspect for possible oil leakages, verify there is no longitudinal/vertical movement of the flanges.

Every 10.000 km (600 h):
- Verify the oil level, this should reach the lower edge of the screw (A) in the picture.

Every 30.000 km (1.200 h):
- Substitute the oil in the transfer box.
- Drain all the oil in the system through the screw (B).

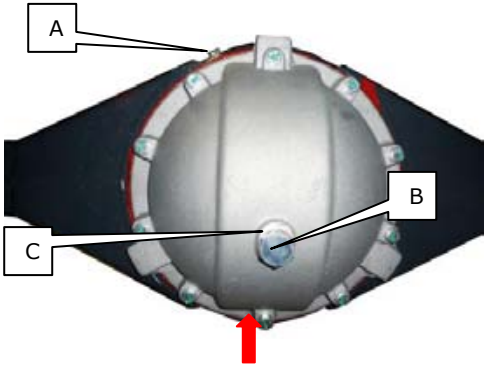


BK Gearbox draining plug and level screw

oil specification:
- SAE 75W/90 GL 4/5 or 85W/90 GL4.
- Oil quantity: approx. 3,0 litres.
- Drain plug: SW 24 mm.
- Top up screw: SW 24 mm.

Every 15.000 km (600 h):
- Inspect for possible oil leakages, verify there is no longitudinal/vertical movement of the flanges.

Every 15.000 km (600 h):
-



Differential „oil top up/ change"

- Verify the oil level, this should reach up to the lower edge of the top up screw (B).

Every 30.000 km (1.200 h):
- Substitute the oil.
- Drain all the oil in the system through the drain plug (C) on the bowl.

WARNING: If the vehicle has a protection plate on the front differential, the protection plate must be undone prior to the oil change so that it is possible to reach the top up screw (B).

On top of the differential you can find the air drain plug (A), check that it is not damaged and clean.
Every 80.000 km (1600 h):
- Inspect for possible movements between the bevel gears.
- In the differential (max. Gap allowed on the tooth sides is approx. 0,2 mm).

Oil specifications:
- SAE 75W/90 GL 4/5 or 85W/90 GL4.
- Oil quantity: approx. 2,0 litres.
- Drain plug: 10 mm hexagonal socket head.
- Top up screw: SW 27 mm.

FUEL TYPE

It has to be used standard fuel according to EN 590:2005 with a minimum cetane number of 48 and a maximum sulphur quantity of 0,5%. Reduce maintenance interval by half if the vehicle has to be used in areas where the fuel sulphur is higher than 0,5%.
This could cause also some malfunctioning of the engine due to the reduced regeneration of the DPF.

ALTERNATIVE FUEL TYPE

Swedish : MK1 alt. MK 2
WARNING: Contact an authorized dealer if if the vehicle has to be used in areas where the fuel sulphur is higher than 0,5%.

FUEL ADDITIVES

- It is recommended not to use additives, by doing so can cause the warranty IVECO. "City diesel" and. EN 590:2005 to be invalidated.
- It is possible to use BIODIESEL, as per EN 14214, only up to a 5% mixture with regular fuel.

WARNING: In some European countries as Germany and Austria, gas stations will add automatically 5% of BIODIESEL in the diesel.

WINTER DIESEL

Normally it is a task of the national gas station network to provide diesel that can be used during the winter period.

In cold areas, i.e. Scandinavian countries, winter diesel meets the specifications that grant the possibility of running Common-Rail engine up to -30 °C. It is recommended not to use additives. These additives usually cause the fuel mixture not to be homogenous, for instance the additive generally stays at the bottom of the tank. Since the intake pump is located at the bottom of the tank, this causes a short term improvement of the diesel fluidity but in the long term can cause serious damages to the pump or to the injectors.
In case the vehicle has to be driven in countries where the winter diesel is not available proceed as follows:
Add a max. of 5% cherosene or petroleum to every full tank of fuel, or 2-stroke engine oil with the 1:300 ratio (1 litre of oil every 300 litres of diesel). Use only top quality 2 stroke engine oil, possibly use oil that doesn't produce soot. Cherosene petroleum or 2-stroke engine oil should be added prior to filling up the tank in order to guarantee the appropriate mixture in the tank.
WARNING: This advise has the only purpose of keeping the vehicle working in those countries where the winter diesel is not available (i.e. Russia etc) and it should be considered an emergency advise. It cannot be excluded that this will cause to long term damages to the pump or the injector. Usage of the above mentioned invalidates the OEM warranty, use the above mixture at your own risk .

FUEL FILTER TABLE

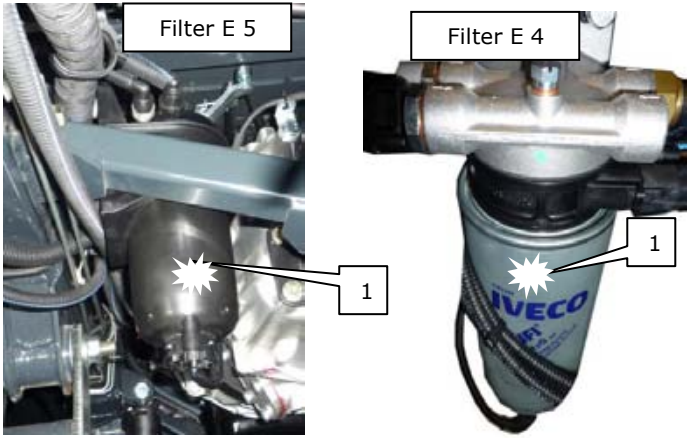
Location on the vehicle	Filter type
Fuel filter under the vehicle chassis	IVECO 5801350522 – UFI25-55-283-20
Fuel pre-filter IVECO	IVECO 500318246

80.000 km (16.000 h):
- Life-time filter.

Every 5.000 km (100 h):
- Drain the fuel through the drain plug (1) (= water sensor), to get rid of water condensation.
- Prior to do so, remove the water sensor plug. (note that the sensor has an anti-detachment device which can be disabled by pressing on the plug).
- Vent the system after substituting the filter or after draining the water condensation.

In order to do so proceed as follows:

A. Position the ignition key on „MAR".
B. The electric pump for the fuel intake starts and turns itself off after approx. 10 sec.
C. Position the ignition key on „ Ø" and wait for approx. 10 seconds (during these 10 second the engine unit will save the data).



Fuel filter for E5 E4 vehicles

D. Position the ignition key on „MAR" and repeat the whole procedure twice. Once this is done it is possible to start the engine.

WARNING:

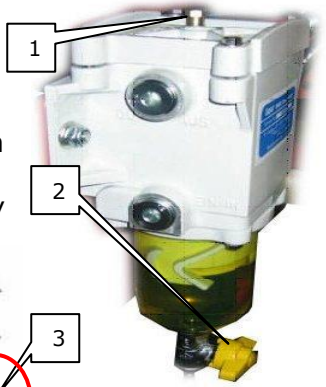
- If the vehicle is used outside the EU gas station network, maintenance intervals have to be used as if used in „Rough Conditions" (Assistance Group).
- For vehicles that are used with fuel which has an unclear origin (i.e. diesel mixed with water) and/or fuel that is clearly polluted (i.e. from canisters, tanks etc.) substitution

interval for the diesel filter should be reduced to 5.000 km. (Vehicles equipped with a SEPAR pre-filter are excluded form the above).

- When refuelling from tanks/canisters, make sure that the tanks/canisters haven't been moved for at least 6 hours prior to the refuelling. Fuels should be taken at least 25 cm from the bottom of the tank/canister.

NOTE: Filter maintenance intervals must be absolutely respected. Damages to the injection that should result from incorrect maintenance will not be repaid by FPT warranty on engine parts.

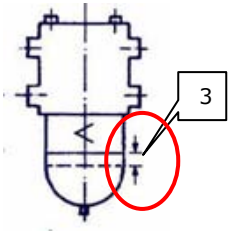
SEPAR FUEL PRE-FILTER (OPTIONAL)



The prefilter has to be checked daily with a visual check of the pipe condition. Depending on the dirt level, the filter has to be emptied weekly or monthly.

- Undo the drain plug (1) on top of the cover and press the drain tap (2), rotate 90° and drain completely.
- Close the tap and the drain plug, breathe the system every 40.000 km (800 h) or replace the filter element yearly.

The maximum level of water should be at least 15 mm (3) below the indicator!



If the maximum level is reached, proceed with draining the water through the drain tap.

FILTER ELEMENT SUBSTITUTION

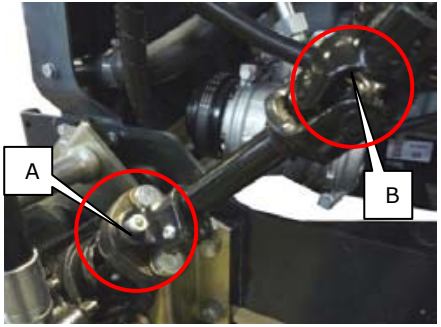
A. Turn the engine off and empty the filter (see above)
B. Undo the cover bolts (M5 hexagonal, SW 8), remove the cover.
C. Remove the filter element housing and remove the filter element.
D. Place the new filter element in its housing and position the housing into the filter unit.
E. Verify that the cover has been placed correctly and that there are no damages to the cover gaskets.
F. Tighten the cover bolts moving from one to bolt to its opposite.
G. Breathe the fuel filter system.

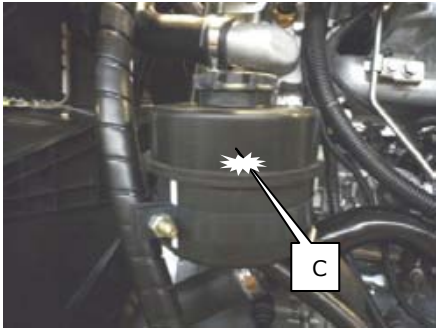
NOTE: If the „SEPAR" filter gets clogged because of winter diesel with paraffin, the filtering element can be removed thus allowing the correct flow.
WARNING:
If the vehicle is used in cold countries we recommend the SEPAR filter with integrated heating.

POWERSTEERING

Every 10.000 km

- Inspect all steering elements, particularly the cardan shaft and the semi-shafts on the steering shaft, particular attention must be used with the precise fit of the lower shaft (A) on the steering box and the upper shaft (B).
- Verify that the rubber boot is free to move and not stuck.
- Every 20.000 km check the oil level in the power steering tank, undo the cap and verify the "Min – Max" on the dipstick (C).
- Every 60.000 km renew the oil and the filter. To drain the system, turn the engine on, fill in with new oil the tank and keep steering from lock to lock until when the steering becomes smooth and easy to operate. Hydraulic Oil: ATF Dexron.

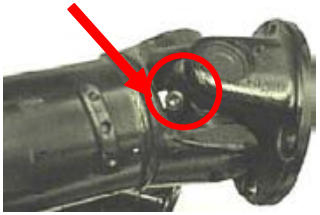




WARNING:
In case of damage to the power steering lines and consequent loss of oil, the engine must be turned off immediately. This has to be done because the pump will not be lubricated and could get blocked with possible damages to the distribution belt connected to the engine that is powering the pump itself.

CARDAN SHAFTS

CARDAN JOINT



Every 10.000 km:

- Grease the cardan shafts with a syringe .
- Apply grease until when you can notice grease coming out from the cardan shaft.

SLIDING JOINT

Every 60.000 Km:

- Grease the splined surfaces of the sliding joint. In order to do this, the cardan shaft will have to be disconnected from its flange on one side.

WARNING: The centre position on the two halves of the cardan shafts is marked with an arrow. If these arrows are not visible any more, mark the two halves with a pen marker before disassembling the two parts.

- Lubricant: soapy grease (lithium based)
-

FRONT & REAR LEAF SPRINGS

every 10.000 km

- Inspect for silent block wear and tear (rubber bushings in the leaf spring eyes).

WARNING: Run the above inspection weekly if the vehicle is driver on a track.

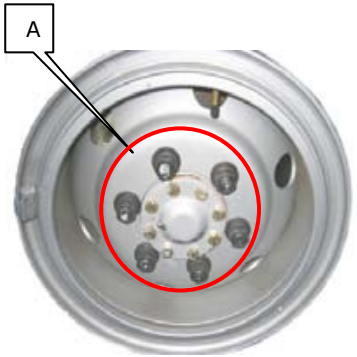
FRONT WHEEL HUB

Every 20.000 km

- Apply grease to the greasing nipple on the front wheel hub (A) with a syringe, until when you see grease coming out on the inner side of the front wheel bearing on the cardan shafts!
- Grease (lithium/molybdenum based)

Every 40.000Km

- Inspect for possible play of the wheel bearing.



Wheel hub

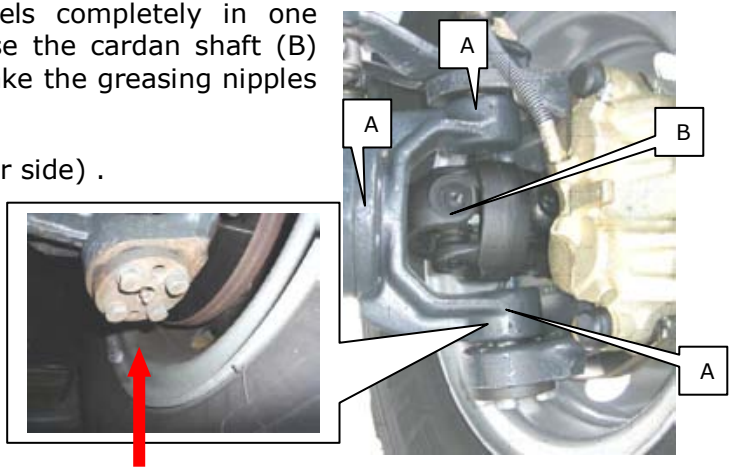
Wheel bearing are maintenance free and cannot be set. Wheel bearings must be replaced if they show play or signs of axial movement. Refer to an authorized workshop to perform this operation.

KING PIN AND FRONT AXLE CARDAN SHAFTS

Every 20.000 km

- Apply grease to the greasing nipple of the front knuckle bearing (A) with a syringe, until when you see some grease coming out from grease breather. Use Grease (lithium/molybdenum based).

Lift the vehicle and steer the wheels completely in one direction in order to be able to grease the cardan shaft (B) the vehicle must be lifted; this will make the greasing nipples on the cardan shafts visible (2 per side) .



Greasing nipples on the cardan shafts

WARNING: Grease at least daily the king pin and the cardan shafts if the vehicle is used on muddy terrains or to wade rivers/streams. In this case the wheel hubs must be greased weekly.

HYDRAULIC PTO SYSTEM (OPTIONAL)

If the vehicle is not used regularly:
- Every 2 years substitute hydraulic oil.
- Clean the oil filter and the oil radiator. Inspect al oil lines and make sure there are no damages.

If the vehicle is used regularly: perform the above mentioned checks on a constant basis.

BRAKES

Weekly

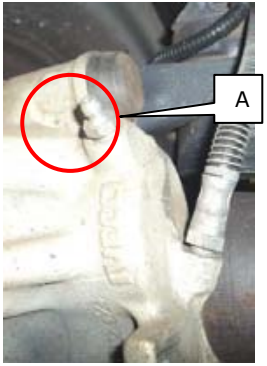
A. Check the oil level on the liquid tank in the engine bay. The level decrease is caused by the brake pad wear. A warning light will go off on the dashboard when the level is close to the „MIN" sign.
B. Check the centre console.
C. Renew the liquid every 2 year. Brake fluid: DOT4.

Brake fluid tank

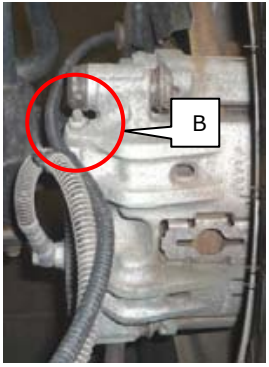
BREATHE THE BRAKE SYSTEM

- It is recommended that the following operations are carried out by an authorized workshop.

A. Front brake breathe plug.
B. Rear brake breathe plug



Brake system breathe plugs



HAND BRAKE PLAY

Weekly
- Verify the braking performance of the hand brake and if necessary adjust it accordingly.
- It is recommended that this operation is carried out by an authorized workshop.

FRONT AND REAR SERVICE BRAKE BACKLASH

Automatic adjustment, it is not possible to ad just it manually.
- Inspect the brake pad wear.

MAINTENANCE WHEN USED OFF-ROAD

Inspect regularly (daily/weekly) and verify that the following components function correctly if the vehicle is used in rough conditions i.e. off-road:

- All mechanical components (visual check ).
- Connect all flexible hoses and pipes (visual check, inspect for possible damages ).
- Radiator fan damages caused by damaged engine supports.
- Engine supports.
- Gearbox and transfer box supports.
- Intake and exhaust pipes.
- Leaf spring, shock absorber and anti-roll bars (Stabilizer).
- Steering box and steering rods.
- Cardan shafts.
- Fuel and oil tanks.
- Cab suspension.

LUBRICATION PROGRAM

The following lubrication program must be followed scrupulously to safeguard the correct functionality of the respective mechanical parts.
WARNING: Lubrication must be carried out with a syringe greaser manually operated  .
The following parts have to be lubricated every 20.000 Km:
- Cardan joints of the transfer box semi-axes (6 pcs)

Every 10.000 Km
- King Pins (2 pcs. per side)
- Cardan joints on the front axle (2 pcs. per side)
- Front Wheel hubs (2 pcs.), steering rods (2 pcs.)
- Hand brake leverage (1 pc.).
- If used in rough conditions or on muddy surfaces or after a wade.

Daily:
- King Pins (2 pcs. per side)
- Cardan joints on the front axle (2 pcs. per side)

Weekly:
- Cardan joints of the transfer box semi-axes (6 pcs)
- steering rods (2 pcs.)
- Front Wheel hubs (2 pcs.)

WADING

WARNING

 "Dry" the brake pad after wading a river or a stream by depressing frequently the brake pedal. Failing to do so could cause an increase of the braking distance and the consequent risks of an accident.
If the vehicle has to go through frequent wades or has been kept in deep water for a considerable amount of time we recommend to inspect the following:

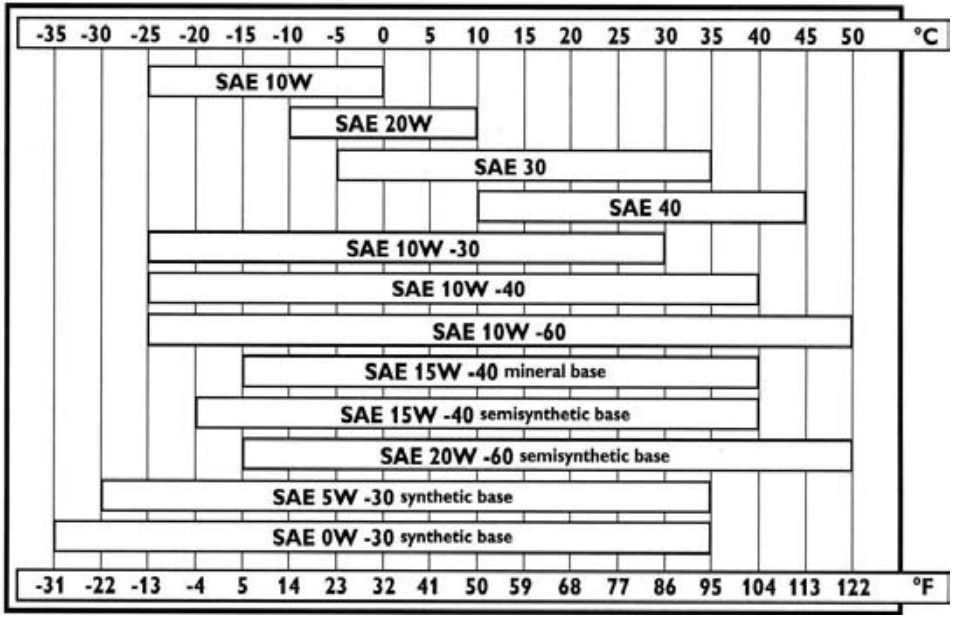
- All the oil/fluid in the engine bay (engine, gearbox, axles) making sure that water has not entered the system, otherwise replace the fluid.
- Instruction on the lubrication program.

TABLE WITH TOP UP FLUIDS AND LUBRICANTS

Group	Lubricant/fluid type
Engine	SAE 10W/40 or 5W/30 ACEA A5B5 at least B3/E2 ACEA e/o API CH4/CG4
Gearbox – transfer box – axles	SAE 85W/90 GL4 or SAE 75W/90 GL4/5
Powersteering	Automatic transmission oil ATF Dexron II D
Braking system	Brake fluid DOT 4
3 way tipper	Oil HLP 46

Hydraulic system for PTO	Oil HLP 46
Water radiator	Anti-freeze liquid for radiators mixed with water 50:50 up to -35 °C.
Greasing points	Grease (lithium/molybdenum based)

APPROVED VISCOSITY LEVELS TABLE



Oil grade:

- At least B3/E2 ACEA and/or CH4/CG4

TOWING

Prior to any towing, determine the weight of the trailer to tow, determine the maximum axle weight and the load on the draw bar.
When towing a load respect the following indications:

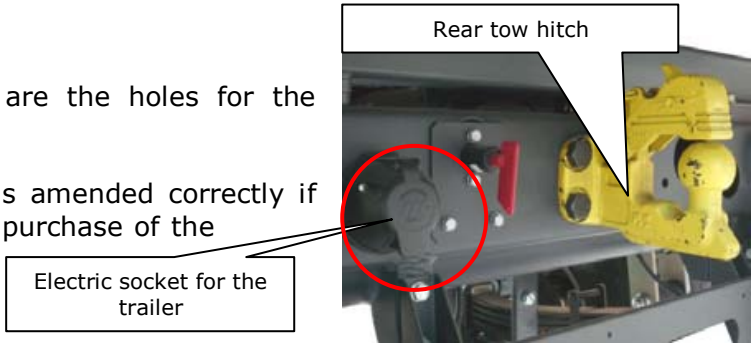
A. Total weight of the trailer (trailer weight + trailer load) should not exceed the maximum towable weight.
B. Towed weight should be split so that the load on the draw bar is at least 25 kg. The load on the draw bar should not exceed 120 kg.
C. The total between kerb weight of the vehicle, vehicle load (passengers included), tow hitch weight and load on the draw bar should be smaller than the maximum allowed weight on the vehicle.
D. Verify that the lights on the trailer are working  .

TOW HITCH

On the rear crossmember there are the holes for the towing hitch (tow bar or ULPIO).

WARNING:

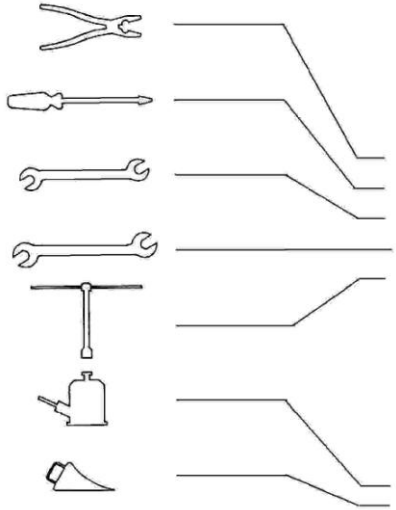
Make sure that the vehicle book is amended correctly if the tow hitch is installed after the purchase of the vehicle.



Tow hitch

VEHICLE TOOL KIT

The vehicle tools and the hydraulic jack are located under and/or behind the passenger seat.
Tool kit composed of:



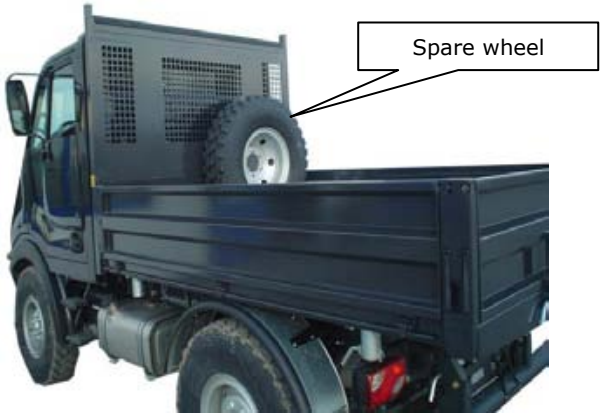
- Universal pliers.
- Pliers for pipes.
- Flat-head screwdriver.
- Philips screwdriver.
- Spanner 8x10**.**
- Spanner 12x13.
- Spanner 14x17.
- Socket spanner 19x22.
- Socket spanner 27 mm.
- Hammer.

Separately:
- Hydraulic jack
- Stopping wedge (optional)

SPARE WHEEL

Spare wheel is positioned in the box, behind the cab.

Use gloves when replacing a wheel, special care must be used not to pinch or squeeze fingers/hands.



REPLACE A TYRE

Rim with elastic ring made of:
- rim, retaining ring, side ring and elastic ring.

In order to remove the tyre the following tools are needed:
- Wood wedge approx. dim. 20x20x20 cm
- Tyre chisel, valve key
- 2 kg hammer and/or if the tyre is particularly old 5 kg hammer with pliers for pipes
- 1-2 flat head screwdrivers with a slotted drive size of approx. 8-10 mm.

TYRE DISASSEMBLY

Lay the wheel you have removed from the vehicle on the wood wedge, make sure the valve is on the upper side (warning: If the floor is dirty or dusty, it is recommended to place a cloth underneath the wedge and underneath the tyre).
With the valve key, disassemble the valve bit and let all the air out from the tyre.

A

B

In order to be able to guarantee the correct balance of the wheel, mark on the tyre with a piece of chalk, or with a marker the position of the balance weights installed on the side ring.
Use the hammer and the chisel to detach the tyre from the rim on the valve side, specifically make sure the side wall of the tyre is at least 20 mm below the rim side ring.
Use the hammer to detach the rim side ring from the rim, specifically make sure the side ring is at least 10 mm below the retaining ring.

C

WARNING: Use a piece of wood when hammering the rim side ring in order not to spoil the rim finish.
Place a screwdriver in the opening between the rim and the tyre and detach the ring from the rim. Using a second screwdriver or simply by hands, remove the ring.

D

E

Turn the tyre around and using the hammer and the chisel remove completely the tyre from the rim.

F

G

H

TYRE ASSEMBLY

Lay the rim on the wood wedge.
Apply specific paste for tyre assembly on the side of the tyre and on the rim ring.
WARNING: Soapy water can be used instead of the specific paste.
Push the tyre on the rim.
Place the retaining ring in place, make sure the "L" shaped part is towards the bottom.

A

B

C

D

Apply specific paste for tyre assembly on the side of the tyre and on the rim ring. Put in place the side ring and the retaining ring. You can hammer/tap in place the ring in its groove on the rim (by hand or with a hammer and a piece o wood). Make sure that the rim

E

F

G

H

I

ring is properly located in its groove.
Screw the valve bit in the rim and inflate the correct tyre pressure as indicated by the tyre manufacturer.

WARNING: Make sure that the tyre side wall and the ring raise uniformly when inflating. If too little paste is used, it might happen that there is too much friction between some points of the tyre side wall and the rim causing a non correct tyre installation. If this happens, disassembly the tyre again, apply more paste and repeat the procedure.

L

M

N

O

NOTE

If the installation is done properly, it is impossible for the retaining ring to detach from the tyre when inflating.

It has to be noted that:

A. The groove for the retaining ring must be clean and free of rust or dirt.
B. The two ends of the retaining ring, when detached from the ring, must be closed to each other and not bent or far away since this will cause an incorrect (insufficient) preload.
C. The reataining ring, prior to the inflation must be correctly positioned in its groove in the rim.

If the retaining ring, with the full pressure in tyre is still not completely in its groove, then it is possible to hammer it /tap it gently with a hammer and a piece of wood in its place.

ALL THAT YOU SHOULD KNOW ABOUT YOUR VEHICLE

PRECAUTIONS IN CASE OF OFF-ROAD USAGE

This vehicle is an off-road vehicle.

WARNING

 Off-road vehicles are higher and have a centre of gravity which is higher from the ground compared to normal vehicles. Off-road vehicles need a more precise toe-in setting compared to normal vehicles.
Being higher, off.road vehicles during cornering are subject to a bigger moment which tends to roll over the vehicle.
Consequently, off-road vehicles are not meant to drive as fast through corners as normal cars. Fast cornering and quick lane changes can increase the risk of rolling over the vehicle
At the same time, having a higher driving seat allows for a better view of the road.

DRIVING OFF-ROAD

MAIN ASPECTS

Recommendations for off-road usage.
Off-road vehicles are higher and have a centre of gravity which is higher from the ground compared to normal vehicles.

WARNING

It is recommended to negotiate tight bends at low speed, compare to the model with road tyres, off-road tyres will have less side grip.

4X4 DRIVE

In most of the cases, the central differential will compensate for the different wheel speed during cornering and consequently will guarantee a normal behaviour of the vehicle with the 4x4 drive enabled both on road and off-road conditions.
If the central differential is "open" (non locked) and on one of the wheels there is no traction because of the wheel being lifted or on snow/ice, then there will be no torque transmission on any of the other 3 wheel, and the vehicle could get stuck.
In order to increase the traction, and only in this case, it is recommended to lock the central differential. Locking of the central differential has to be done only with a standing still vehicle.

On dry tarmac roads it is recommended not to lock the differential since doing so will cause damages to the axles. (There is no front vs rear axle speed balance).

USING THE SELECTABLE 4 WHEEL DRIVE

 Central differential should be locked on tarmac roads covered in snow and on icy roads, so to be able to increase the traction of the vehicle. Since this is possible also when moving (forward with wheel straight), it is possible to adapt promptly to different road conditions (dry/snowy or icy road). On dry tarmac roads it is recommended not to lock the differential since doing so will cause damages to the axles.
On rough roads: to increase the vehicle traction it could be necessary to lock the central differential.

USING THE OFF-ROAD GEAR

 The off-road gear should be used when it is necessary to increase the vehicle traction and to reduce the vehicle speed on rough terrains.
WARNING
Driving at high speed can cause loss of traction and consequently risk of accidents and excessive stress to the frame.

The off-road gear can be used either with the central differential locked or with the central differential unlocked.

CHARACTERISTICS OF AN OFF-ROAD VEHICLE

The possibility for the vehicle to adapt to different terrain conditions is obtained thanks to technical and geometrical characteristics that in some cases are directly opposite to those of normal road vehicles. Specifically these are:
4 wheel drive for optimal traction.
Slow speed and high traction forces.
Big wheels so to have smaller pressure and great height from the ground.
Big approach and departure angles so to be able to drive on slopes.
Big ramp breakover angle so to be able to drive over humps.

WARNING
All these characteristics make the driving behaviour of the off-road vehicle on normal roads worse than a non off-road vehicle  it is highly recommended that this is taken into consideration when driving.

TECHNICAL DATA OF THE OFF-ROAD VEHICLE

T-REX

	On road		Off-road
Max. Slope	100%		100%
Max. Side slope	(*)65% (31°)		60% (28°)
Max. Approach angle	40°		45°
Max. Departure angle	35/40°	short overhang	40/45°
	25°	long overhang	30°
Max. Breakover angle	35°	wheelbase 2600	45°
	30°	wheelbase 3100	40°
	25°	wheelbase 3450	35°
Minimum ground height	220 mm		290 mm
Maximum wading height	750 mm		900 mm
Steering diameter	11 m	wheelbase 2600	11 m
	13 m	wheelbase 3100	13 m
	15 m	wheelbase 3450	15 m

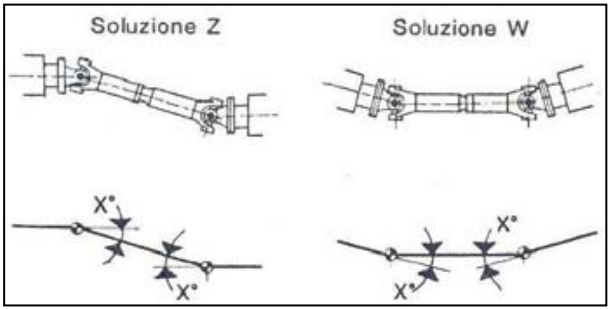
(*) The figure for the maximum side slope is based on a real life driving experiments and are consequently lower than the theoretical ones obtained from calculations. For your safety it is important not to exceed this values.

WARNING

Using the vehicle or any of its components (including the various bodies and equipments) differently from what prescribed voids any warranty.

POWER TAKE OFF (PTO)

There are several type of PTO's to operate external tools as hydraulic cranes, tippers etc. Depending on the application and the required performances, the PTO can be placed on:
Gearbox
Transfer box
On the front side of the engine
On the rear of the vehicle



PTO's positions

It is important to consider the power consumption of the PTO's (5%-10% for mechanic transmission, belts and gears, higher for hydraulic devices) during the definition of the required needed power the gear ratio of the PTO transmission must be chosen so to operate the engine in its optimum efficiency range:

- Low revs (below 1000 rpm) should be avoided so to guarantee a regular and smooth usage of the engine.

Special care should be taken also on the definition of the transmission kinematics (angles, rpm, torque) from the PTO to the installed tool, and on the definition of the dynamics, in order to make sure that all requirements from the transmission manufacturer are respected. When dimensioning, forces that could happen at the maximum power and at the maximum torque should be considered. To guarantee a good speed distribution, angles at the two ends should be identical and should be kept as small as possible; solution Z is usually preferred to solution W, since it gives lower forces on the bearings and on the tool.

ENGINE PTO

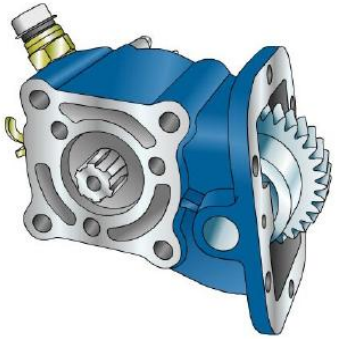
PTO's installed on front end of the engine can be used when the vehicle is stationary and when the vehicle is moving:

- PTO connected to the drive shaft with an elastic joint.
- Maximum power output 13 KW at 3.000 rpm.

GEARBOX PTO

WARNING

PTO installed on the gearbox should be used only with the gearbox on the neutral position and with the clutch released.
Characteristics of pumps used in this configuration are the following:



PTO TABLE

Engine - Gearbox	Engine Rpm	PTO output Rpm
F1A – S300	1	0,910
F1C – S400	1	1,044

	PTO on RH side Zf 6s-300	PTO on LH side Zf 6s-400 vo
Torque (Nm)	180	180
Gear ratio	1,27	1,45
Teeth NO.	28	32

PTO ON THE TRANSFER BOX

- Pto on the transfer box is generally used on a standing still vehicle.
- If it is necessary to move the vehicle when using this kind of PTO, the vehicle should not change gear.
- This PTO can have a rotating flange on the rear crossmember of the vehicle
- The most appropriate gear will be chosen depending on the required rpm.

WARNING Maximum power output 55 KW.

TABLE ILLUSTRATING RPM ON THE TRANSFER BOX PTO

NUMERO DI GIRI PRESA DI FORZA POSTERIORE												
	MOTORE F1C						MOTORE F1A					
	CAMBIO ZF S-380-6M						CAMBIO ZF S-300-6M					
	RAPPORTI CAMBIO						RAPPORTI CAMBIO					
	1a	2a	3a	4a	5a	6a	1a	2a	3a	4a	5a	6a
N° GIRI MOTORE rpm	5,37	3,15	2,04	1,36	1	0,79	6,72	3,94	2,55	1,77	1,29	1
1.000	186	317	490	735	1.000	1.266	149	254	392	565	775	1.000
1.200	223	381	588	882	1.200	1.519	179	305	471	678	930	1.200
1.400	261	444	686	1.029	1.400	1.772	208	355	549	791	1.085	1.400
1.600	298	508	784	1.176	1.600	2.025	238	406	627	904	1.240	1.600
1.800	335	571	882	1.324	1.800	2.278	268	457	706	1.017	1.395	1.800
2.000	372	635	980	1.471	2.000	2.532	298	508	784	1.130	1.550	2.000
2.200	410	698	1.078	1.618	2.200	2.785	327	558	863	1.243	1.705	2.200
2.400	447	762	1.176	1.765	2.400	3.038	357	609	941	1.356	1.860	2.400
2.600	484	825	1.275	1.912	2.600	3.291	387	660	1.020	1.469	2.016	2.600
2.800	521	889	1.373	2.059	2.800	3.544	417	711	1.098	1.582	2.171	2.800
3.000	559	952	1.471	2.206	3.000	3.797	446	761	1.176	1.695	2.326	3.000
3.200	596	1.016	1.569	2.353	3.200	4.051	476	812	1.255	1.808	2.481	3.200
3.400	633	1.079	1.667	2.500	3.400	4.304	506	863	1.333	1.921	2.636	3.400
3.600	670	1.143	1.765	2.647	3.600	4.557	536	914	1.412	2.034	2.791	3.600
3.800	708	1.206	1.863	2.794	3.800	4.810	565	964	1.490	2.147	2.946	3.800
4.000	745	1.270	1.961	2.941	4.000	5.063	595	1.015	1.569	2.260	3.101	4.000

Gearbox s-400 6m.

- Please contact the BREMACH Technical office for questions or for the installation of special groups.

- It is anyway a task of the body builder to get the installation approved by the Authority in charge when this is required by the law.

WARNING

-  All data indicated in this manual are for reference only and are not binding. Due to continuous development of the product, BREMACH reserve the right to modify the content of this manual without any prior notice and obligation.

VEHICLE CARE

Off road vehicles are subject to more corrosion than normal vehicles due to their usage off-road and the different weather conditions they are exposed to. For instance salt/grit used on European roads in winter attacks all body parts, in the same way as the mineral salt in the desert sand can do.
Appropriate care of your vehicle is based also on anti corrosion treatments and a long term anti rust protection.

WARNING

Most frequent causes of rust on your vehicle are:
- Salt or dirt deposits, in areas that are difficult to reach of you vehicle underbody.
- Chipped or damaged paint as a result of small accidents, gravel and small stones.
- Special care is fundamental if you live in special areas or if you drive your vehicle in special conditions such as:
- Grit used on winter roads or specific chemical products make dirt and dust stick to the underbody and increase the rust formation, similar effect is caused by salty air from the seaside areas, or in the desert area or by polluted air from industrial areas.
- High humidity speeds up the rust formation process, especially with temperatures just slightly above the freezing point.
- Constant humidity in some areas of your vehicle can cause the rust formation even if the rest of the vehicle is dry.

WARNING

High temperatures can cause rust to form on specific areas of your vehicle if these parts don't get dry because of insufficient ventilation.
As indicated in the points above, it is recommended that the vehicle must be kept in good and clean conditions, especially its underbody, moreover it is recommended that all damages to the paint work are fixed promptly.

IMPORTANT

In order to prevent rust formation respect the following instructions:
- Wash your vehicle often, you should keep your vehicle in good and clean condition.
- To prevent rust formation respect the following:
- Clean the underbody of your vehicle at least once a month if you drive on roads where grit has been used or you live closet o the sea or in desert areas.
- Water and pressure cleaner are indicated for cleaning the underbody of the vehicle and for the wheel arches. Special care must be dedicated to these areas since they are not easy to reach.
- The vehicle conditions can worsen if dirt deposits are just made wet but not removed.

- kickplates and other areas of the chassis have special drain holes that should noty be obstructed by dirt because the remaining water could cause rust.
- When winter is over, make sure that the underbody of the vehicle is clean.
- Check  paint work.
- Repair immediately scratches and damages to the paintwork caused by gravel or small stones prior to the rust formation.
- Damages should be fixed by an authorized workshop if the damages to the paint are so deep that reach the raw metal underneath.
- Inspect the inside of your vehicle.
- Water and dirt can create deposits on the floor carpets and this can cause rust to form. Check regularly that the carpets are dry.
- When transporting chemical, cleaning products, fertilizers, salt etc. you should make sure that these substances are kept in containers designed to transport these specific materials.
- In case of any spillage, clean and dry immediately the spillage area.
- When parking, chose a well ventilated garage or an open air parking place.
- Don't park the vehicle in a poorly ventilated place or in a moist garage.
- If you wash you vehicle after cleaning to dry in a parking garage or if you park your vehicle still wet or covered with snow in a garage, you can increase the possibility of rust formation.
- In poorly ventilated garages, even if warm a wet vehicle can get damaged by corrosion and rust.

Below you find a list of possible causes that can lead to paint damages and consequently to rust formation and corrosion.

WARNING

Wash your vehicle particularly often if:
- You drive around sea side areas.
- You drive on road that have been gritted or with sand on the road.
- You have deposit of tar, resins, birds excrements and bug rests on your vehicle.
- You drive in areas where there is a high level of air pollution caused by smoke, soot, dust, iron dust or chemicals.
- You have deposits of mud or dust on your vehicle.
- You have been on a long journey especially around desert areas or salty lakes areas etc.

Dear Customer,

The European Directives 2005/64/CE - 2000/53/CE were implemented, through the legislative decrees D. Legge 209/2003 and D. Legge 152/2006; these directives define that an N1 or an M1 vehicle can be commercialized only if at least 85% of is mass is reusable or recyclable and 95% of its mass is reusable or salvageable, the producer must also provide specific instructions on how to scrap not roadworthy vehicles and how to reuse, recycle, salvage the components of the vehicles.

Main target of these directives is to reduce the impact on the environment of not roadworthy vehicles making sure that the vehicles are designed from the beginning so to facilitate reusing, recycling etc of the vehicle components.

BREMACH, as vehicle manufacturer, has to respect the above mentioned directives; BREMACH has a Design and Production system that takes into consideration and facilitate reusing, recycling and scrapping of not roadworthy vehicles and components as defined by the directives.

BREMACH is aware of the eventual impact on the environment of its vehicles when scrapped, because it keeps under strict control components, materials and masses used to build its vehicles along the whole supply chain, from the initial concept to the end of life disposal.

Regarding the end of life scrappage of BREMACH vehicles, BREMACH cooperates with "Aoraki S.c.r.s.l.", consortium of scrapyards belonging to the A.D.A. (Associazione Demolitori Autoveicoli –Vehicle Scrapyard Association).

For the above mentioned reason, BREMACH recommends to its customer to bring the nto roadworthy BREMACH vehicle to one of the Aoraki centres or alternatively to return the vehicle to the authorized dealer where the vehicle was purchased.

Respect the normatives of the country where the vehicle is used.

If you need clarifications or in case you need to know the closest consortium centre please use the details below:

A.D.A.- ASSOCIAZIONE NAZIONALE DEMOLITORI AUTOVEICOLI
Corso Venezia, 47/49 20121 MILANO
Tel. 027712121-027750442 Fax. 0277121232
e-mail: segreteria@ada-net.it
web: www.ada-net.it