

USER MANUAL

KIT-QUAD SUSPENSION SYSTEM

COMPETITION USE ONLY



USER MANUAL

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First considerations

- Before installing the kit, please read carefully this manual
- **CREUAT** Technical Service is the only certified center to perform the maintenance and repair operations that require replacing or pressurizing hydraulic fluid and gas charges.
- The suspension is a vital element for the ATV safety, we recommend that the installation is done by a professional.

1.- INTRODUCTION

This User Manual is aimed for the competition drivers and mechanics that incorporate the **KIT-QUAD** to their vehicles. The **KIT-QUAD** technology is based on the **CREUAT** system. The purpose of this manual is to provide the setup instructions for the kit, as well as the necessary information related to the basic maintenance and failure detection.

We are sure that you will enjoy driving your vehicle with our system installed on it.

2.- DELIVERED COMPONENTS

To be able to carry on with the **KIT-QUAD** installation please check out that the kit box contains all the components as listed below:

- Installation Manual (copy for the Shop)
- User Manual (copy for the end user)
- 1 Central Device.
- 1 Fixing support for the central device
- Screws to fix the support to the central device
- 4 Hydraulic cylinders each with its own hydraulic hose
- Straps to fix the flexible hoses.

3.- WARRANTY

- **CREUAT S.L.** warrants all its products against manufacturing defects.
- The **CREUAT** products are designed for their use in competition. For this reason, **CREUAT** cannot guarantee its products once they have been installed.
- The warranty does not cover damages produced by the use such as:
 - Accidents.
 - Use of the kit for vehicles other than the specified that the system has been designed and configured for.
 - Incorrect installation of the system, wrong cylinder mounting, central device or hoses fixtures.
 - Manipulation of the system other than specified in this manual, such as changes in the hydraulic circuit, manipulations of the hydraulic oil or changes of the gas charges.
 - Transportation damages.

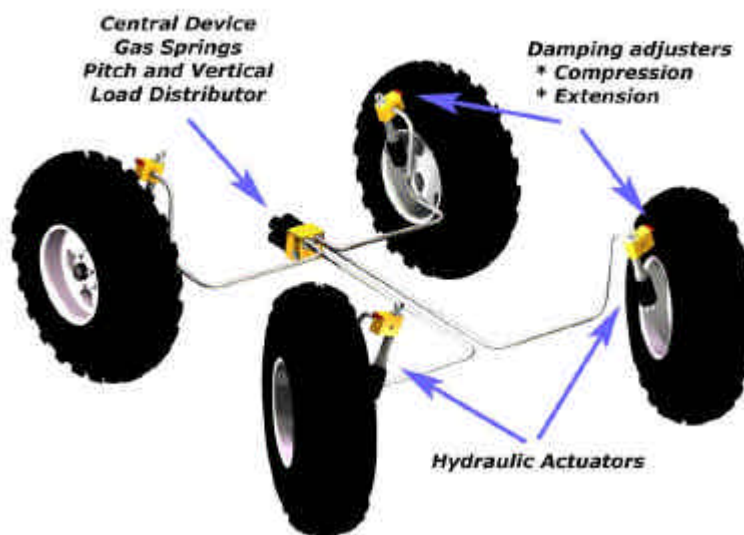
CREUAT S.L reserves the right to make any final decision regarding any warranty of its own products.

→ Important: Keep invoice and proof of payment.

4.- SYSTEM DESCRIPTION.

The **KIT-QUAD** is an integral suspension system, with an instantaneous reaction, and designed to separate the response to each movement of the vehicle such as roll, pitch, vertical movement and axle articulation.

The **KIT-QUAD** provides the advantages of a specific configuration for each vehicle movement, without electronic components, and without the complexity of active suspensions.



The **KIT-QUAD** design is simple and effective, it does not incorporate sensors or actuators, thus providing an immediate reaction to the wheel movements. In this way it provides greater stability without impairing the ability to absorb road

bumps, better isolating the vehicle and the steering.

Moreover, the system provides a much better maneuver capability than the conventional system based on coilovers and antiroll bar.

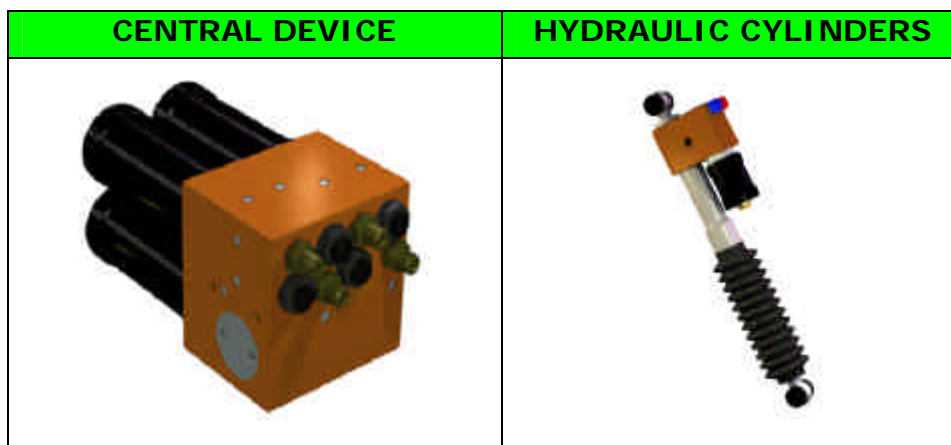
The **KIT-QUAD** suspension system works with high hydraulic pressure. It does not require any specific attention once it is correctly installed and operating.

The **KIT-QUAD** advantages can be summarized as follows:

- It separates the response to each suspension mode, therefore it allows a higher level of optimization because each movement can be adjusted independently of each other.
- The lower axis articulation resistance increases traction and grip if compared to conventional suspensions, reducing the need to use the 4x4 traction mode.
- The stiffer pitch and roll settings provide more stability at higher speeds without impairing traction both at high and low speeds, and retaining the capability to absorb road bumps.
- It has been demonstrated that the **CREUAT** system isolates the steering from bump overreaction. It contributes specially the lower axle articulation resistance. This feature works in two ways: It distributes the vehicle weight on its wheels but it also distributes the bump reactions in one wheel among all other. This makes the vehicle easier to drive on difficult slow tracks, as well as on fast ones.

5.- SYSTEM COMPONENTS

The **KIT-QUAD** can be installed in a quick, clean and easy way, replacing the suspension elements (shocks, springs and anti roll bar) with four hydraulic cylinders connected to a central device by means of flexible hoses.



Once the **KIT-QUAD** has been installed, it is ready to use, and it does not require external devices to keep the system pressure or control it.

6.- ADJUSTMENTS

The **KIT-QUAD** incorporates compression (blue) and extension (red) adjustments placed on each cylinder head. (see image)

When these adjusters are rotated clockwise, we harder the suspension system, and when rotated counterclockwise, we soften it.

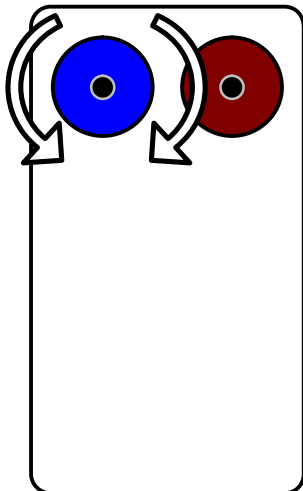
- **Compression:** This is the upwards movement of the suspension, This adjustment helps with bumps movements to provide the right damping. Soft settings will absorb small bumps better, but will overreact over large bumps and will be too weak during jump landings.

Hard settings, on the contrary can be too harass, becoming to uncomfortable. To find the right settings will depend on the vehicle usage and the driver's preferences.

- **Extension:** This is the downwards movement of the suspension. This adjustment helps to regulate the speed the suspension returns to its position after a bump. Normally this adjustment is set harder than the compression aiming for a higher stability with the least comfort tradeoff.



6.1 Compression settings



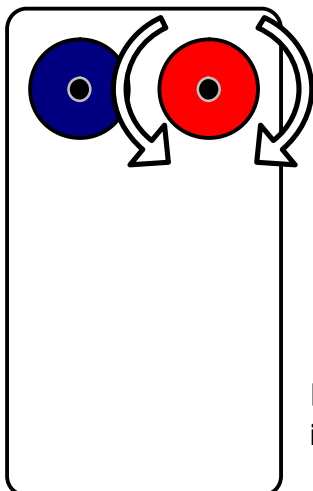
Compression adjustments are set with the **BLUE** knob. To get the right settings it is recommended to start the adjustment from the stiffest position (closed clockwise) and soften it progressively (turning knob counterclockwise).

Tests in different circumstances and several pilots indicate an optimal configuration that it's detailed in the next page.

Notes

- It is not advisable to determine the actual effect of the adjustment by pushing manually. The right settings must be determined with the vehicle over bumps and jumps.
- To do a proper setup turn the adjustment $\frac{1}{4}$ of a turn each time, testing the effect of the change each time.

6.2 Extension settings



To adjust the extension settings turn the **RED** knob. A proper regulation should start from the most stiff position (closed clockwise) and soften the adjustment progressively turning the knob (counterclockwise).

Tests in different circumstances and several pilots indicate an optimal configuration that it's detailed in the next page.

Notes

- It is not advisable to determine the actual effect of the adjustment by pushing manually. The right settings must be determined with the vehicle over bumps and jumps.
- To do a proper setup turn the adjustment $\frac{1}{4}$ of a turn each time, testing
- If the extension adjustment is too stiff, cylinders will recover the position too slowly for the next bump. This can be confusing as it may generate an overreaction of the suspension similar to excessively soft settings.

→ IMPORTANT

- **The cylinders settings are:**
 - **Front extension $\frac{1}{2}$ turn (open) and compression 1 turn (open)**
 - **Rear extension $\frac{1}{4}$ turn (open) and compression $\frac{1}{2}$ turn (open)**

→ IMPORTANT

- **If you need a hard setting for fast track type, don't remove the anti-roll bar**

7.-MAINTENANCE

CREUAT recommends to do a proper maintenance of the **KIT-QUAD** to ensure it is on its best usage conditions. Som basic care of the suspension components will redound in a better functioning and longer life.

The proper cleaning of cylinders, hoses and central device can be done with warm water lightly soaped. Special care has to be taken with locations that cumulate dirt, sand and mud.

Revisions have to be followed periodically depending of the usage of the vehicle, the terrain where it is driven, and the weather conditions.

It is necessary to increase the frequency of revisions when:

- Dry and dusty terrains.
- Wet and muddy tracks
- Large jumps circuits
- Resistance races
- Long excursions, specially with extreme environment conditions.
- High temperatures

Important:

- **DO NOT DISASSEMBLE any element during maintenance**
- **Bring the vehicle to a technical center to proceed with any repair of the system.**

8.-REVISION AND MAINTENANCE INTERVALS

	AFTER EVERY USE	TRIMES-TRAL	ANNUAL
OUTSIDE CLEANING	M		
CYLINDERS REVISION	M	R	R
CENTRAL DEVICE REVISION		M	R
FLEXIBLE HOSES REVISION		M	R
FIXTURES AND BEARINGS REVISION	M	R	R
HYDRAULIC LEAKING		R	R
GAS LEACKING		R	R

M= Maintenance: Visual inspection and cleaning.

R= Revision: Throughfull inspection at a technical center.

8.- MALFUNCTIONS: DETECTION AND SOLUTION

Malfunction	Probable cause	Solution
Front sinking heavily when braking.	Too soft settings in the front compression	Increase front compression stiffness (BLUE knob.)
Rear sinking heavily when accelerating.	Too soft settings in the rear compression	Increase rear compression stiffness (BLUE knob.)
Front too "jumpy" over bumpy roads.	A Too soft settings in the front extension	Increase front extension stiffness (RED KNOB)
Rear too "jumpy" over bumpy roads.	A Too soft settings in the rear extension	Increase rear extension stiffness (RED KNOB)
Too nervous over small bumps.	Too stiff compression and extension settings.	Reduce stiffness on both extension and compression knobs
Small hydraulic leakage	Loose raccords or defective seals.	Bring the vehicle to the technical service.
Height loss or tilt attitude	Undetected hydraulic leak or gas leak	Bring the vehicle to the technical service..
Important leak of hydraulic fluid in a hose or cilynder	Breakage of a cilynder or hose	Substitute the broken part and install a conventional coilover until reach technical service

Notes:

Notes: