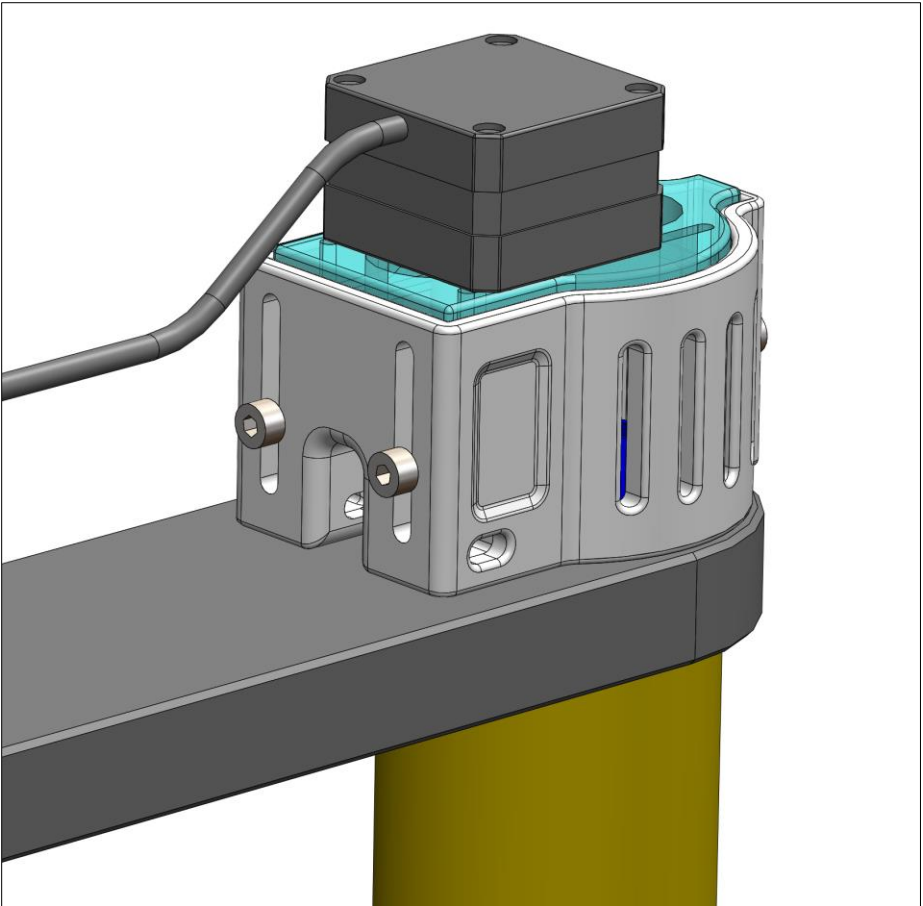


GRIPONE

PERFORMANCE IMPROVING DEVICES

E-SUSPENSION

Transform your classic front fork into an active electronic suspension



INTRODUCTION

Suspension setting is always some kind of compromise. Why can't we reverse the trend?

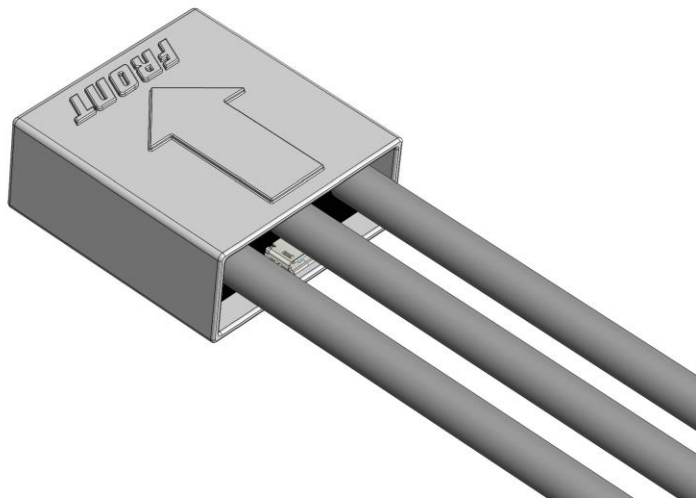
Suspension adjustments are always a compromise between different needs. Braking support, sensitivity, reaction speed and stability are just some of the rider's primary needs. If you want more support, you lose sensitivity. If you want stability you lose speed of reaction, and so on. Until now, the rider has had to decide what to sacrifice to get something in return.

Thanks to GRIPONE E-SUSPENSION, this problem no longer exists. GRIPONE E-SUSPENSION is an electronic servo-assisted system that optimizes the front forks of your motorcycle in real time, transforming them into a real electronic suspension.

HOW IT WORKS

How GRIPONE E-SUSPENSION can optimize the front suspension?

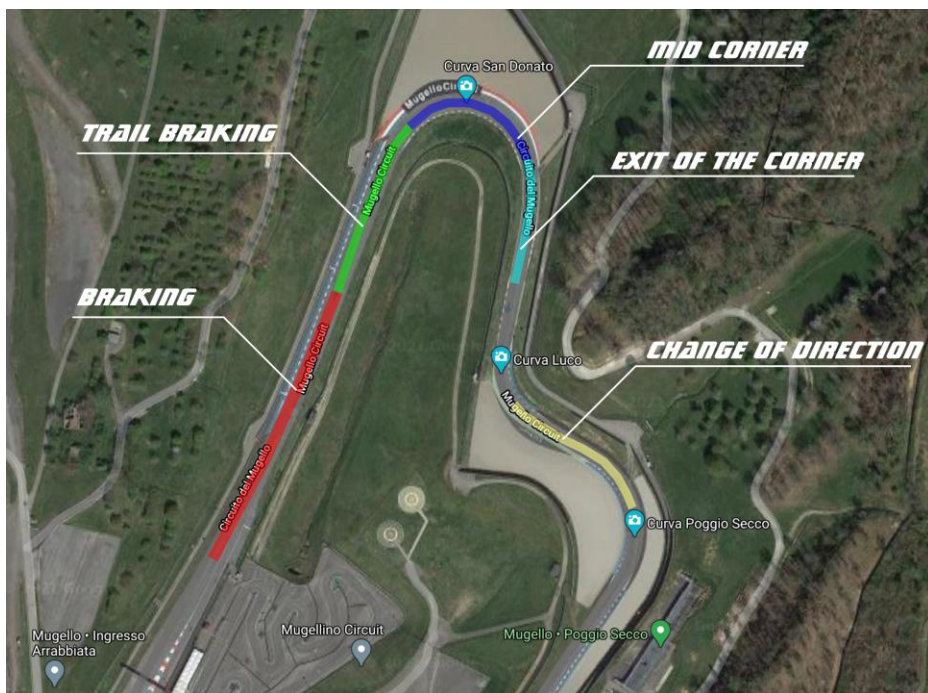
GRIPONE E-SUSPENSION, through two servo motors (controlled by an inertial measurement unit) acts directly on the external hydraulic adjustments of the fork. The IMU (inertial measurement unit) detects the circumstances in which special adjustments need to be made and activates the servo motors to vary the fork calibration. The adjusters of the fork are modified in real time (at frequency 250Hz), so as to have the best hydraulic response in every situation.



What is GRIPONE E-SUSPENSION able to do?

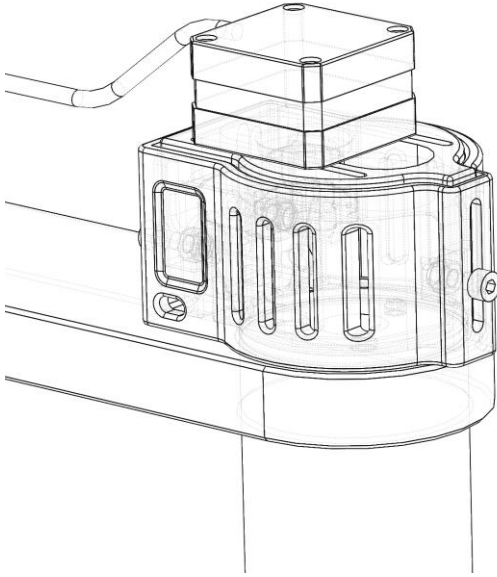
GRIPONE E-SUSPENSION, through the inertial platform, is able to detect some of the most crucial circumstances.

- **Braking:** it is a very delicate phase where a lot of support is required from the fork. Braking as late as possible is important for improving performance;
- **Trail braking:** the part of braking that precedes the mid-corner is treacherous: support but also sensitivity is needed because in this phase the bike is particularly inclined;
- **Mid corner:** the center of the curve is the most delicate phase because the bike reaches the maximum lean angle and the grip offered by the front wheel is never enough;
- **Exit of corner:** exiting each corner you want to accelerate but the bike tends to go outwards, along the line tangent to the trajectory;
- **Change of direction:** the change of direction must be performed quickly but the faster you are to move the bike (from one side to the other), the more you feel the detachment of the front wheel from the ground;



Example of San Donato – Luco – Poggio Secco curves at Mugello circuit

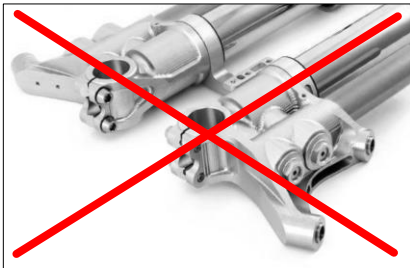
In each of these phases, **GRIPONE E-SUSPENSION** makes changes in real time to the hydraulic external adjusters of the forks (both for the compression and for rebound phase). By doing so, the fork hydraulic response is always optimized. Not anymore compromise!



WHO CAN INSTALL GRIPONE E-SUSPENSION

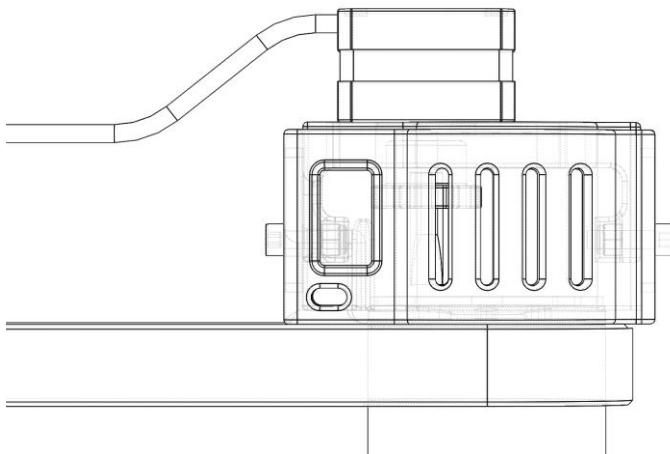
Is my motorcycle suitable for this device?

The essential requirement to be able to install GRIPONE E-SUSPENSION is to have the hydraulic adjusters of the fork positioned in the cap of the leg. The shape of the cap and the brand of the fork are not important. GRIPONE E-SUSPENSION can be installed on all brands of forks and on all forks that have aftermarket cartridges.



My front fork is different, I am not sure...

Some front forks have compression adjuster on one leg and rebound adjuster on the other leg. In this case, the servo motors are mounted one on the right leg and one on the left leg. Other type of forks (such as the BPF) have both adjustments on both legs. In this second case, the 1st servo motor is mounted on right leg (in proximity of the compression's adjuster) and the 2nd servo motor is mounted on the left leg (in proximity of the rebound's adjuster).



GRIPONE E-SUSPENSION FOR MANUFACTURER

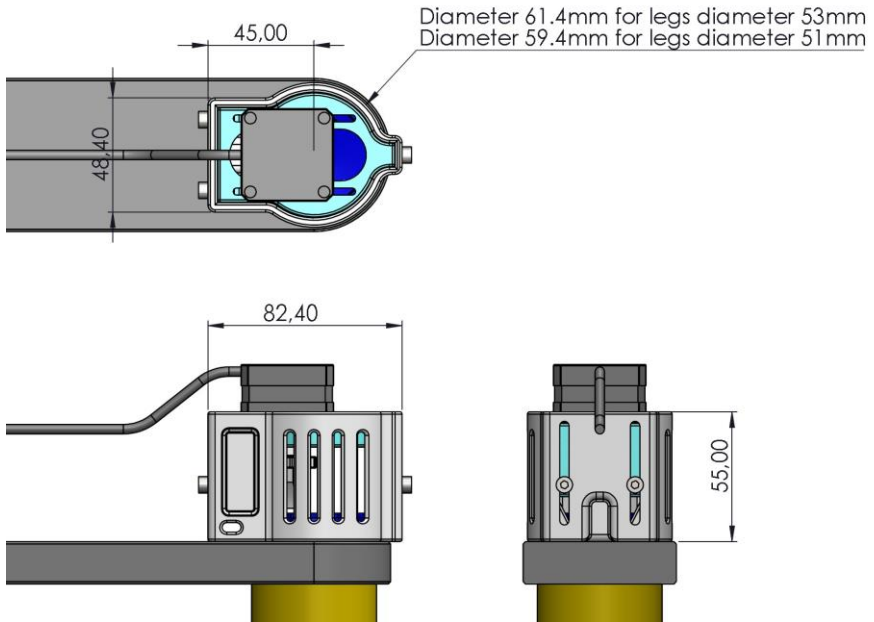
Suspensions evolution?

GRIPONE E-SUSPENSION is a project designed to be suitable into many different motorcycles with many different kinds of front fork. This means that the design and the dimensions are not optimized for one single motorcycle or one single suspension brand. GUBELLINI s.a.s. can design a specific application thought for a motorcycle manufacturer or a suspension manufacturer in order to miniaturize the device and optimize the functionalities.

The real core of this device is the IMU (inertial measurement unit), able to detect the vehicle dynamic state and command the actuators (in this case 2 servo motors). In order to develop a specific application, the IMU can be thought as main brain able to interact with many different device or actuators.

The IMU can communicate with other device by dedicated line (like H-bridge for servo motor, DC motor or solenoid) or via CAN bus. The limitation is only thinking to what kind of application we need.

DIMENSIONS



SPECIFICATIONS

Accelerometer

3-axis +/- 32g

Gyro

3-axis +/- 2000dps

CAN BUS

Baud rate: 1Mbs/500Kbs

Format: INTEL LSB CAN 2.0B 11-bit 1Mbs

ID: programmable

Resolution output

Accelerations: +/- 0.002g

Gyro: +/- 0.01dps

Roll: +/- 0.01 deg

Pitch: +/- 0.01 deg

Output CAN

Roll angle (deg)

Output H-Bridge 1 .. 4

Voltage: 2.7-18 volts

Current: 1A RMS at 25°C

PWM frequency: 250KHz

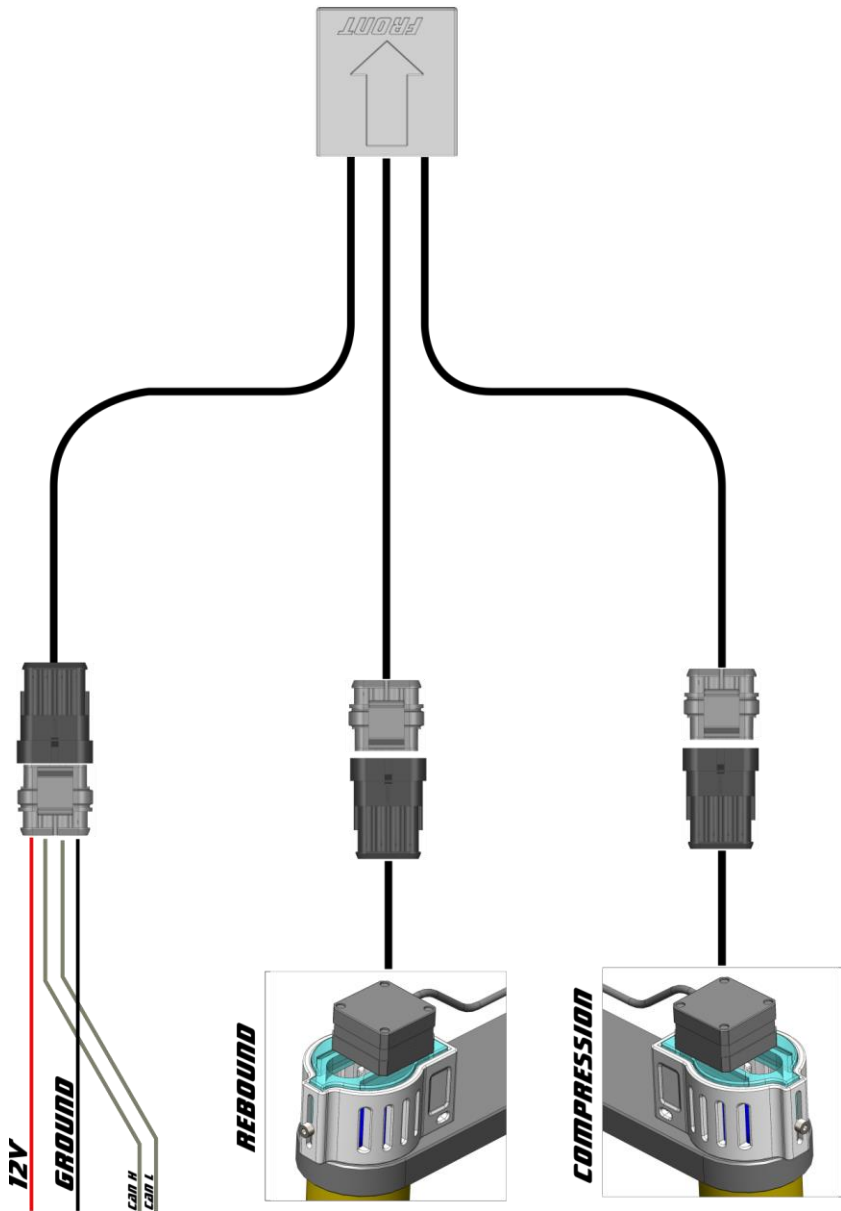
Resistance: 1000 mOhm

Output Servo motor

Rotation speed: 52RPM

Torque: 2.5 kgf/cm

CONNECTION SCHEME





GUBELLINI S.A.S.

THE COMPANY

GUBELLINI s.a.s is the company that owns the GRIPONE brand and all its products. The company is been founded in 2008 with the intention of designing and producing high-tech electronic devices for road and off-road motorcycles. In the first years GUBELLINI s.a.s. had started to develop basic traction control systems for racing and street motorcycles. The core business of the company was the production of "after-market" additional units for street bikes. In few years, traction control systems became also wheelie control systems and launch control systems. Over the years the production has been expanded with electronic quick shifters and carbon aerodynamic winglets. Now GUBELLINI s.a.s. boasts a complete catalogue, which covers most of the motorcycles in circulation and for which plug & play systems are provided, easy to install and with high technological content. In the last two years GUBELLINI s.a.s. has started collaborations with large companies for the design of electronic modules related to vehicle dynamics, to be integrated into series production.

WHO IS DIEGO GUBELLINI

GUBELLINI s.a.s. is a small, family-run company, but which includes a high "know how" derived from its founder. Gubellini Diego is the soul of this company and the designer of all the products that make up the GRIPONE catalogue. Diego since 1996 is engaged as a technician on the highest-level international road racing fields. Initially he worked as a responsible for data acquisition systems (in the 500cc and 250 class of the World Championship).

In 2002, when the MotoGP era begun, he became responsible for the vehicle control strategies (in the MotoGP class). He worked on engine and vehicle control strategies for 9 years with some of the best riders in the world making a lot of experience about how to improve the motorcycle performances.

Since 2012 Diego worked as a chief engineer for some of the most important teams in MotoGP like Team Honda Gresini, Aprilia Racing and also the new Petronas Yamaha Racing Team. Among the most important collaborations of Diego Gubellini there are Alex Barros (1997), Fabrizio Pirovano (1998), Stephan Chambon (1998), Daijro Kato (2001-2002), Sete Gibernau (2003), Colin Edwards (2004) Marco Melandri (2005-2007), Alex De Angelis (2008), Shynia Nakano (2009), Hiroshi Aoyama (2011), Michele Pirro (2012), Scott Redding (2014), Stefan Bradl (2015-2016), Tito Rabat (2017), Franco Morbidelli (2018) and Fabio Quartararò (2019).

Thanks to the experience gained in MotoGP, Diego Gubellini was able to model the products of the GRIPONE range until to make them the best after market devices in their field. Now GUBELLINI s.a.s. is able to produce a complete range of additional ECU for the most popular motorcycle on the market, able to improve the performances and safety.

MISSION

We are a "small" company, but with a direct line to high level competitions, capable of accumulating experience and seeing the evolution of the best technologies used in motorsport live. Thanks to this particular nature, GUBELLINI s.a.s. presents itself as a manufacturing company (thanks also to highly qualified partners) but also, and above all, as an engineering partner, able to design and develop projects connected to the motorcycle world. Our small size allows flexibility in collaborations for big companies. For us is crucial can follow the design process (of devices for racing applications and not only) from the beginning to end. Our experience allows us to produce and deliver projects, starting from the draft on paper, until to get to the working prototypes. Our streamlined structure allows us to easily modify the path initially set, optimizing it in case of need. Thanks to these characteristics, GUBELLINI s.a.s. is able to become a partner in the production of small and medium batches of electronic devices and a partner in the development of innovative component

GRIPONE

designed, owned and made by

GUBELLINI

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