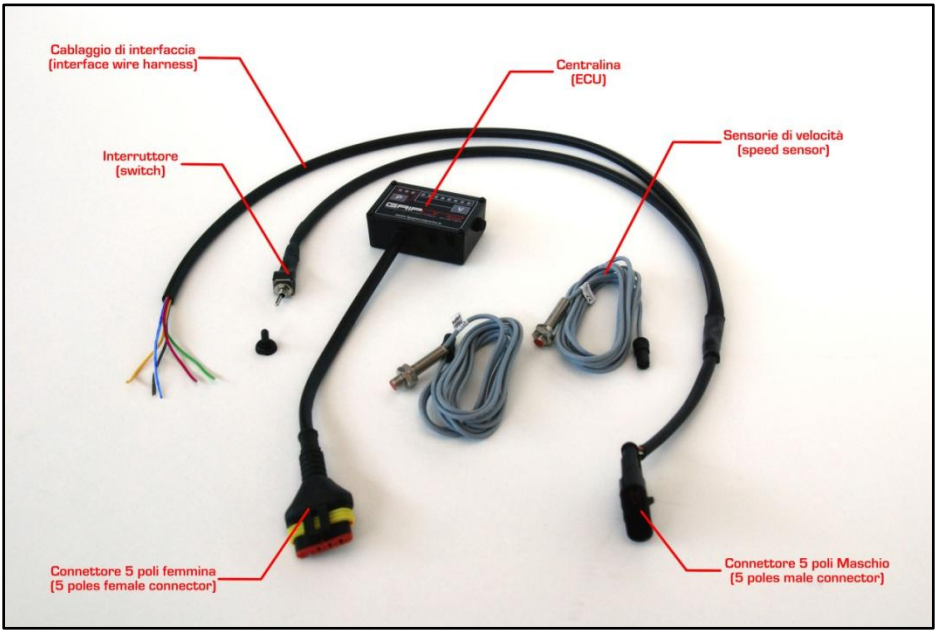
GRIPone
TRACTION CONTROL SYSTEM

User Manual

Note!

Before using the system GRIPone read every page of this manual. The installation of this device requires attention and accuracy. The configuration of the device requires several non-trivial reflections, referred to only within this manual. Please note that you are installing a device on a vehicle can reach high speeds. The system GRIPone is a professional and not approved for use on road.

Contens of the kit



SECURITY

During the installation of this product, it is recommended to position the motorbike in such a way that is cannot cause any injury or damage by falling down or moving forward or backward; it is recommended to use the rear stand or, if necessary, the wheel lock.

Make sure that the injection system is always turned off and that the electrical equipment is not being powered during the installation of this product (and, as well as, during all assembly phases indicated in this manual). When adding or removing electrical cables or wiring to/from the motorcycle's equipment, always be sure to remove the negative battery terminal before the positive battery terminal. During reassembly phases, connect the negative terminal last in order to avoid short circuiting the electrical equipment.

INSTALLATION RECCOMENDATIONS

DO NOT RUSH! When installing the GRIPone control unit, make sure that the unit is protected from excessive vibrations and surrounding elements and that it is clamped firmly. When you use the adhesive parts (for setting up the control unit or cables), make sure that the mounting surfaces are clean and free of dust or grease by cleaning them with degreasing solution.

When positioning the wiring, make sure that the wires cannot be pinched or crushed which may cause subsequent malfunctions, clamp them as necessary. For safe and professional assembly, it is recommended that you solder the connections when possible and use thermo-tightening bands to isolate the various conductors. Place the hot part of the welder on the ends of the wires before putting them in contact with each other. Do not hesitate to contact the vendor/supplier for assistance if you encounter any difficulties with the installation of this device.

WARNING! The GRIPone control unit must be placed where the operating temperature does not exceed 65°C and should be installed where it will be protected from vibrations and surrounding elements. Locate a flat surface on which to secure the control unit. Do not secure the unit until the installation of all other components has been completed and the wiring has been secured

1. What is GRIPone

In sports, every bike is continually found to be in critical situations in which the rear wheel loses its grip during acceleration. GRIPone is a universal device, designed to be easily attached to any vehicle and through which it is possible to control the level of sliding at the rear wheel. Moment by moment, GRIPone checks the conditions of the motorbike on which it is mounted and manages the power to restore the optimal running conditions, increasing stability and improving the overall yield.

2. How does GRIPone work

GRIPone is an electronic traction control system consisting of two elements: the GRIPone control unit and two speed sensors. Working in unison, they continuously monitor the traction conditions for the motorcycle. Under normal circumstances (i.e. when no sliding is occurring), the control unit does not intervene in any way with the motorcycle.

When above-normal sliding is detected, the control unit reduces the engine power until normal roadholding is restored. Once the rear tire re-establishes correct adhesion and the sliding is detected to be within the accepted threshold, the control unit ceases to reduce the engine power.

3. Installation of the Control Unit

The installation of the system involves connecting the GRIPone control unit to the power wiring of the motorcycle and linking the two speed sensors in close proximity to both wheels The installation of the GRIPone control unit is possible on all motorcycles with inductive or transistor ignitions (or on bikes with injection system of a single injector per cylinder). The GRIPone control unit cannot be installed on CDI control. Connecting the GRIPone control unit to CDI type ignition, it will be damaged.

Note!

The electrical installation on some specific motorcycle models can be done by a special "plug & play" cable kit. This kit allow the user to not modify the bike wirw harness. To install the "plug & play" cable kit, please see the documents attached to its.

Connection on bike with 2, 3 or 4 cylinders (or engine with single injector for cylinder)

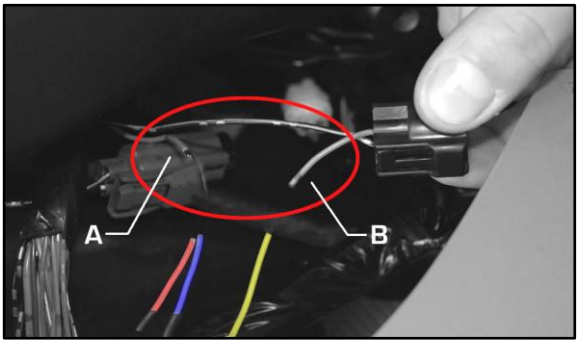


Figura 1

Please follow the following steps for electrical connection.

1. Be sure that the bike is off and battery is disconnected.

2. Place the GRIPone ecu by the special tape included into the kit. Please choose a position far from hot please (engine, exhaust pipe). Near to head pipe or tachometer are recommended.

3. Connect the included cable to GRIPone ecu by the "superseal" 5 pole connector.

4. Connect the black wire to the frame by the included ring tongues. Be sure that the chosen point is electrically connected to negative pole of battery.

5. Find the positive pole of ignition coil (or single injector for cylinder). To find the positive pole the user can check all the wire of all ignition coils (or injector). The one that is common to all coils is the positive pole.

6. Cut the positive pole of ignition coil (on injector) near to the connector. (fig.1)

7. Connect the red and blue wire (of GRIPone cable) to the A end (fig. 1) by the heatshrincable head junction (fig. 2).

8. Connect the yellow wire (of GRIPone cable) to the B end (fig. 1) by the heatshrincable head junction (fig. 3).

9. Cut the negative pole of other coil (or other injector). Don't use the same coil chosen in steps 6, 7 and 8.

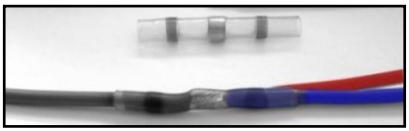


Figura 2

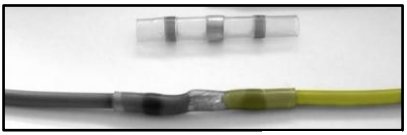


Figura 3

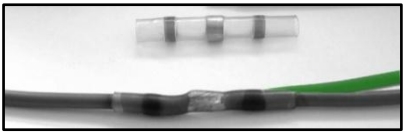
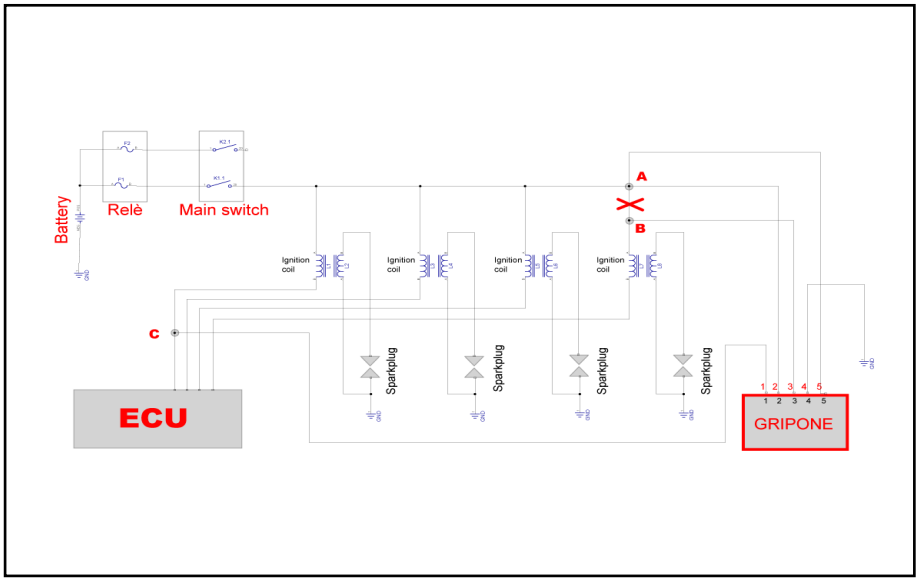


Figura 4

10. Connect the green wire (of GRIPone cable) to the two ends created in step 9 (fig.4).

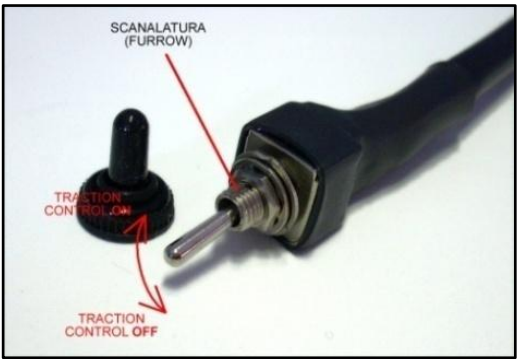


Example: How to connect the GRIPone to 4 cylinder bike (application to ignition coils)

NOTA: Connecting the GRIPone to 2 or 3 cylinder bike the rule of connection remain the same. If the engine of the bike is single cylinder type, the connection of GRIPone is permitted only to the single injector of cylinder.

ON-OFF Switch

onto the cable included in the kit there is a lever switch that allow you to activate or not the traction control system. On the switch there is a thread that
allow you to fix it at a panel. On the thread there is a elongate furrow. When the lever is set to the direction of the furrow the traction control system is operative. When the lever is set to the opposite direction the traction control system is off.



4. Installation of sensors

To measure the speed and spinning of the bike the GRIPone ecu use two sensor, one for each wheel The sensors consist of a filleted M8x1 cylinder which is connected to the signal cable (already wired). The connectors that are located at the ends of the cable of the sensors should be connected to the two 3-pole connectors located on the GRIPone control unit (fig. 7). Follow the following step.

1. Make a support for front sensor The front sensor must detect the passage of 3 or more bolt of front brake disk (fig.5).

2. Fix the front sensor to the support and adjust its to the correct distance to disk bolt. The sensors detect the passage of a bolt if it is not further away than 1.5 mm or closer than 0.5 mm. **Locking torque = 0.5 Kg/m.** (fig.5)

3. Make a support for rear sensor The rear sensor must detect the passage of 3 or more bolt of rear brake disk (or rear sprocket). (fig. 6)

4. Fix the rear sensor to the support and adjust its to the correct distance to disk bolt. The sensors detect the passage of a bolt if it is not further away than 1.5 mm or closer than 0.5 mm. **Locking torque = 0.5 Kg/m.** (fig.6)

5. Connect the front sensor to the 3 pole connector placed on the right (on GRIPone ecu) and the rear sensor to connector on the left. (fig. 7)

6. Switch on the GRIPone ecu.

7. Check that both sensors detect the passage of the bolt. If the sensor detect correctly the bolt a led (placed on back of sensor) will switch on.

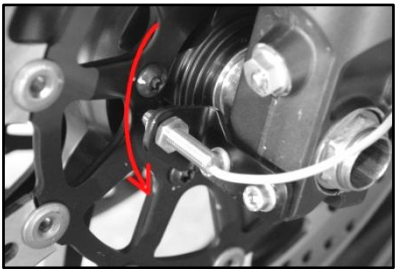


Figura 5

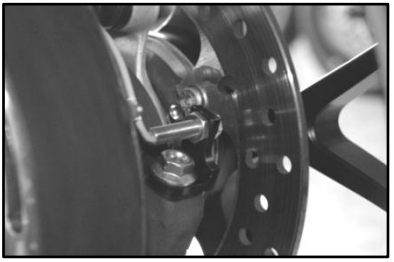


Figura 6

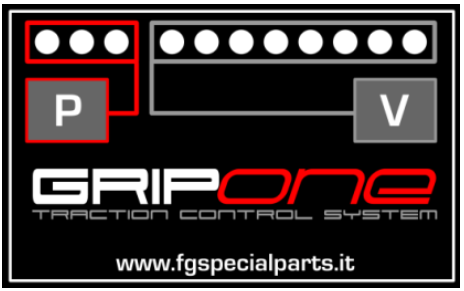
Figura 7

Important

It is important not to confuse the front sensor with the rear sensor when connecting two sensors to GRIPone ecu. Please refer to the figure 7. The proximity sensors should be applied to the motorcycle through rigid brackets, so that at every complete revolution of the wheel they detect the passage from a minimum of 3 to maximum of 6 bolt.

When installing the sensors in correspondence with the fixing screws of the disk brake or of the rear crown, be careful not to use (as ferrous objects) hollow head screws (like hollow screws or bolts or Allen head screws). If the motorcycle is equipped with this type of screws, it is necessary to replace them with full head screws. Every ferrous object detected by the sensor should be equidistant from the others. If these two conditions are not satisfied, the system will not function correctly.

5. Configuration of GRIPone ECU



After the elettrical connection and positioning of sensors, to obtain the correct functioning of the system it is, then, necessary to set up three configuration parameters within the control unit.
On the front panel of GRIPone there are some leds. The yellow led (parameter leds) show the state of system. If the parameter led flash the system is in ON mode. In that state the ecu is ready to start. If the parameter leds are fixed the ecu are in configuration mode. In that state the parameter leds show the configuration parameter activate. The red leds (value leds) into the ON mode show the spinning level of the bike. In to the configuration mode the red leds show the value of selected configuration parameter.. The configuration of parameters is made by pushing of two buttons on front panel: button P (Parameter) and button V (Value). Please follow the following step to configure the ecu.

1. Switch on the GRIPone ecu. The ecu must be in ON mode (parameter leds are flashing).
2. Push the P button on front panel (one time) to approach to the configuration mode. The first parameter (spinning) will be selected. The Value leds show the value of this parameter. The Parameter leds show the parameter selected (as reported in to the following table).

"PARAMETER" LEDs	PARAMETER
	Spinning
	Cut
	Engine
	Ratio
	Pulse

"PARAMETER" LEDs	VALUE
	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

3. Push the V button if the user want change the value of selected parameter. For each pushing of V button the value will be increase until the its maximum value allowed. One more pushing will fix the value of selected parameter to its minimum value allowed. Every modification will be saved automatically.
4. Push the P button to switch to the next parameter.

5. Repeat the step 3 and 4 to scroll (and modify) all parameters until come back to the ON mode. The return to ON mode will be indicate by rapid flashing of all value leds.

Before start the bike fix the ON mode on GRIPone ecu.

Note:
By the P button it's possible scroll all the configuration parameters. The sequence of parameters are the following: SPINNING, CUT, ENGINE, RATIO e PULSE. By the V button it's possible increase the value of each parameters. Please note that not every parameters have the same numbers of allowed value. Pay attention to the following paragraph for the meaning of parameters.

6. Meaning of parameter

Spinning (1° parameter) 
This parameter fix the sensibility of GRIPone ecu to the to the spinning level of rear tyre. The user can adjust this parameter from minimum of 1 to maximum of 8. Increasing the value the ecu will be less sensible to the grip loosing of rear tyre. The value 1 correspond to the maximum sensibility of the system. The value 8 correspond to the minimum sensibility of the system.
Minimum = 1 - Maximum = 8

Cut (2° parameter) 
The parameter "cut" determine the intensity of the control of the system (when the ecu redeem the excessive spinning). When the level of spinning become higher than the maximum allowed, the GRIPone decrease the power of the engine based on the "cut" parameter. If this parameter is 0 (zero) the ecu does not decrease the power in any condition. The value 1 correspond to the minimum effect on power control: when ecu control the engine power, the power drop is very small. The value 8 correspond to the maximum effect on power control: when ecu control the engine power, the power drop is very big.
Increasing the "cut" parameter (scrolling it from 1 to 8) it's possible to increase the effect of control on the engine power.
Minimum: 0 - Maximum: 8

Engine (3° parameter) 
The value of "engine" parameter depend on installation of system on the byke. If the green wire of GRIPone cable is connected to the ignition coil or to the fuel injector this parameter must be fixed to 0 (zero). If the green wire of GRIPone cable is connected to the pickup on crankshaft the "engine" parameter must be fixed to 1.
Minimum: 0 - Maximum: 1

Pulse (5° parameter) 
The "pulse" parameter inform the ecu about the numbers of pulse detected by speed sensors for a complete wheel revolution. Based on the number of pulses detected by the front and rear sensors, set this parameter according to the values reported in following table.
Minimum: 0 - Maximum: 15

Rear wheel pulse	Front wheel pulse	Value to fix	Value LEDs
3	3	0	
3	4	1	
3	5	2	
3	6	3	
4	3	4	
4	4	5	
4	5	6	
4	6	7	
5	3	8	
5	4	9	
5	5	10	
5	6	11	
6	3	12	
6	4	13	
6	5	14	
6	6	15	

Ratio (4° parameter)

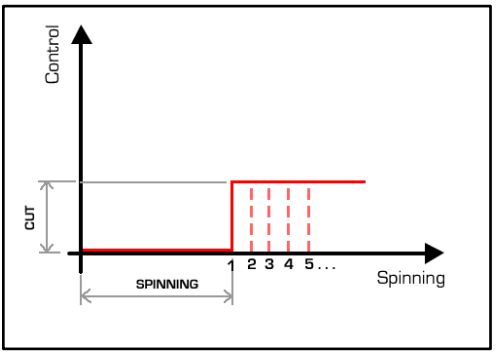
The RATIO parameter informs the GRIPone control unit on the ratio between the development of the rear tire and the development of the front tire (RATIO = Rear Development / Front Development). Based on the development of the tires (front and rear), select the RATIO value following reference table. The development of the tires should be measured using a measuring tape in proximity to the center of the wheel.

Rotolamento ruota anteriore [front wheel dimension] (cm) \ Rotolamento ruota posteriore [rear wheel dimension] (cm)	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210
185	3	3	4	4	4	5	5	5	6	6	6	7	7	7	8	8
186	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7	8
187	2	3	3	3	4	4	4	5	5	5	6	6	6	7	7	7
188	2	2	3	3	3	4	4	4	5	5	5	6	6	6	7	7
189	2	2	2	3	3	3	4	4	4	5	5	5	6	6	6	7
190	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
191	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6
192	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6
193	0	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5
194	0	0	1	1	1	2	2	2	3	3	3	4	4	4	5	5
195	0	0	0	1	1	1	2	2	2	3	3	3	4	4	4	5
196		0	0	0	1	1	1	2	2	2	3	3	3	4	4	4
197			0	0	0	1	1	1	2	2	2	3	3	3	4	4
198				0	0	0	1	1	1	2	2	2	3	3	3	4
199					0	0	0	1	1	1	2	2	2	3	3	3
200						0	0	0	1	1	1	2	2	2	3	3
201							0	0	0	1	1	1	2	2	2	3
202								0	0	0	1	1	1	2	2	2
203									0	0	0	1	1	1	2	2
204										0	0	0	1	1	1	2

Minimum: 0 – Maximum: 8

7. How best configure the unit

Logic operation



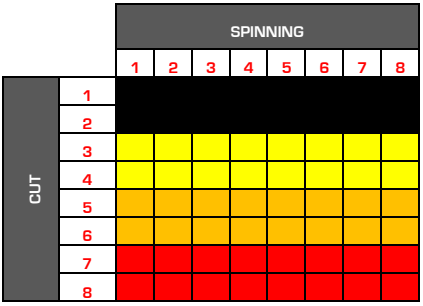
Once fixed the parameters "engine", "pulse" e "ratio" these will remain the same in every condition. The other two parameters ("spinning" and "cut") are used to optimize the system to the user preferences.
The GRIPone give to the user the possibility to adjust the point where the system start to control the spinning.
Increasing the value of "spinning" the user can increase the spinning level allowed before switch on the control (by system). With the low value of "spinning" (1, 2 or 3) the user can obtain a high sensibility of the system. With the high value of "spinning" (6, 7 or 8) the user can obtain a low sensibility of the system. The parameter "cut" gives to the user the possibility to adjust the intensity of control on to the engine power (when the spinning level is higher than maximum allowed). Increasing the parameter "cut" the user can increase the power drop when there is a level of spinning higher than maximum allowed.

External factors that influence the operation

The GRIPone can be influenced by some external condition. The first factor than can influence the system is the type of engine of the bike. The same regulation of the system can be right for a 4 cylinder engine and wrong for 2 cylinder engine. For this reason we suggest to adjust the parameter "cut" on based of the type of engine.

CUT \ SPINNING	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

The table above show the suggested value of cut for a 2 cylinder engine. Yellow show the value to obtain a very smooth effect on power control. Orange show the value to obtain a very medium effect on power control. Red show the value to obtain a high effect on power control. We suggest to don't use the value 7 and 8 with 2 cylinder engine because the effect could be too strong.



The table above show the suggested value of cut for a 4 cylinder engine. Yellow show the value to obtain a very smooth effect on power control. Orange show the value to obtain a very medium effect on power control. Red show the value to obtain a high effect on power control. We suggest to don't use the value 7 and 8 with 4 cylinder engine because the effect could be too light.

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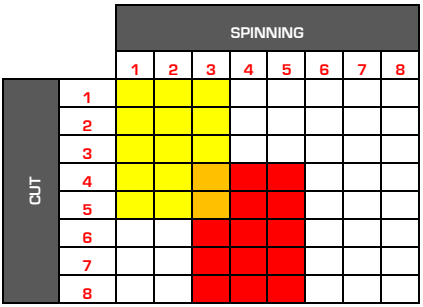
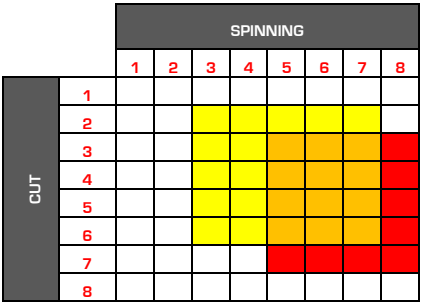
Another factor that can influnce the system GRIPone is the riding style of the rider and the style of throttle using. A rider that use the throttle very smoothly can give less strees to the tyre. They also can have less spinning. A riders with aggressive riding style put more strees on the tyre and they obtain more spinning by rear tyre.



The above table show the regulations suggested for not professional rider based on riding style. The yellow show the regulations for riders who use the throttle very smoothly. The red show the regulations for riders who use the throttle very aggressively.



The above table show the regulations suggested for professional rider based on riding style. The yellow show the regulations for riders who use the throttle very smoothly. The red show the regulations for riders who use the throttle very aggressively.

Another factor that can influence the work of the system is tyres profile. Using a racing profile tyres the real develop of the tyre change by the angle of leaning. In that condition the system can be quite sensible at the maximum angle of leaning and less sensible at the mid angle. Please adjust the parameter "spinning" to avoid a excessive sensitive at maximum angle (increasing this parameter).
If the user want to use the GRIPone like a safety system for not racing propose, he can fix the parameter "spinning" and "cut" as follow.

Spinning = 1 

Cut = 8 

Note: The suggestions above about the parameters "spinning" and "cut" can help the user to find quickly the right regulation.

ATENTION

Please keep in mind that the traction control system does not preclude crash caused by a wrong use of the throttle of the veichle in general. For this reason we suggest to test the work of the system and its effect on the byke carefully. Please try the different regulation by small step and do not exaggerate with the use of throttle.

8. Caratteristiche

Features	Rif.
Power:	11-18 volt
Dimensions:	78x52x28 (mm)
Weight:	200g
Min speed:	about 30 Kmh
Max speed:	about 360 Kmh
Max Revs	about 20000 RPM
Min dimension of front tyre:	185 cm
Max dimension of front tyre:	220 cm
Min dimension of rear tyre:	185 cm
Max dimension of rear tyre:	220 cm
Wheel pulses for revolution	min 3 – max 6

9. Spare parts

Description	Code	Note
Kit GRIPone	XGRIP ONE	Contens: 1 GRIPone ecu, 2 speed sensors, 1 wiring, 1 user manual
Speed sensor	XSENSORI GRIP	
3 pole connector female	XBINDER3_F	
3 pole connector male	XBINDER3_M	
5 pole connector female	XSUPERSEAL5_F	Without terminals
5 pole connector male	XSUPERSEAL5_M	Without terminals
Terminals for 5 pole connector female	XSUPERSEAL_METAL_F	
Terminals for 5 pole connector male	XSUPERSEAL_METAL_M	

10. Sensors

Features	Description
Type:	inductive proximity
Power:	12-24 Volt
Output:	NPN NO – open collector
Schield:	yes
Sensing distance	max 2mm
Operating frequency:	0 – 1500 Hz
Dimension:	M8 x 1
Operating temperature:	-40° +85°
Material:	steel inox
Torque::	max 0.5 Kg/m

Prodotto distribuito da

Gubellini

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