

GRIPDRIVE

TRACTION CONTROL SYSTEM



CONTROL SAFETY

PERFORMANCE TRACTION
TECHNOLOGY POWER

GRIPone

TRACTION CONTROL SYSTEM

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.

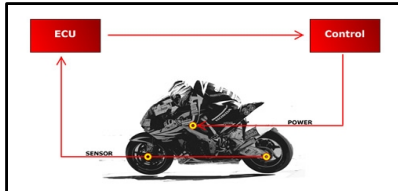
1. What is GRIPone

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.

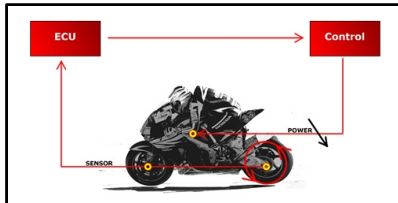


2. How does GRIPone work

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.

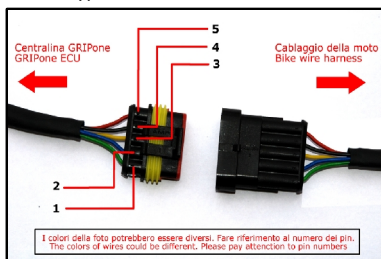
The electrical connection of the sensors is simply done by inserting the male 3-pole connectors (located at the end of the sensors' cable) into the female connectors on the GripONE control unit.

Through the 5-pole connector and through the supplied cable, it is possible for the GRIPone control unit to interface with the electrical equipment of the motorcycle. 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 can be installed on CDI control units only through an additional interface filter (available upon request).

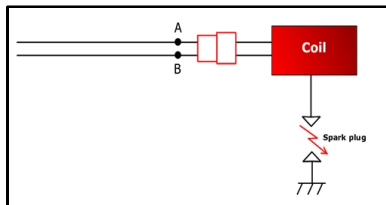
Through a tester set for detecting continual voltages, verify the voltage between point A and ground;

Through a tester set for detecting continual voltages, verify the voltage between point B and ground; If a voltage equivalent (or almost equivalent) to 12 volts is detected at any one of the two points, the ignition is a transistor type (and not a CDI type). In some cases, it is necessary to start the engine in order to detect the voltage.

If a voltage equivalent (or almost equivalent) to 12 volts is not detected in either of the two points, then the ignition is a CDI type.



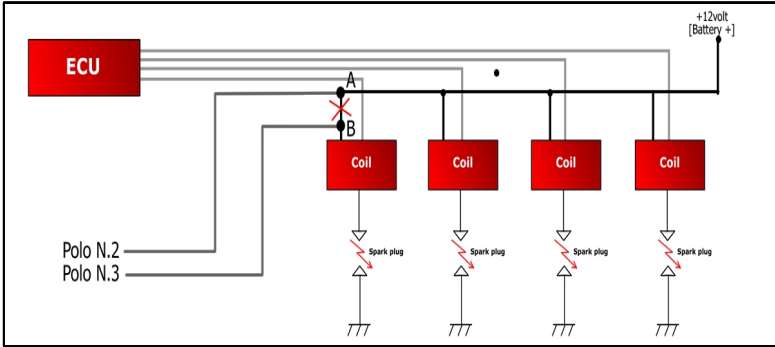
Inductive or Transistor Ignitions (for 2-, 3-, or 4-cylinder motorcycles).



In order to verify whether the ignition falls into this category, refer to the user's manual for the motorcycle or proceed as follows. Disconnect the connector from one of the coils on the motorcycle; Turn the key and activate the main switch to power the vehicle;

If the ignition system is a transistor or inductive discharge type, then proceed with connecting the electrical cables of the motorcycle as described below.

- Pole **N.5**: Power (10 – 18 volt) under the ignition key;
- Pole **N.4**: Ground (GND) or negative pole of the battery;
- Pole **N.1**: Impulsive signal relative to the engine rpm (detectable by the speedometer of the motorcycle or by the positive pole of the pickup phase or by the negative pole of the injector). Do not detect the engine's rpm linking directly to one of the coils. The detected signal should deliver **a single pulse for every driveshaft revolution** (or for every camshaft revolution). If the signal detected is more than one pulse, then the system may not be functioning correctly.



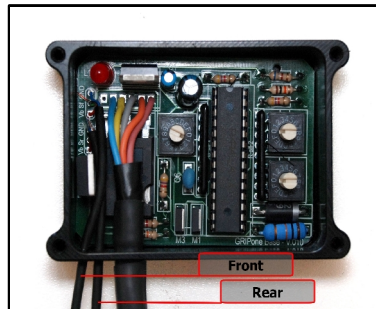
Connect poles 2 and 3 as described below. Detach the cable from one of the coils on the positive pole (as demonstrated in the figure above). The choice of the coil is irrelevant. In order to locate the above-mentioned cable, it is recommended to use the graphic diagrams of the motorcycle. Once the cable is detached, the cable will have two ends (that we will refer to as A and B). One end connected to the positive pole of the battery (A) and the other directly to the coil (B). Connect end (B) directly to the coil of the motorcycle at pole No. 3 and the other end (A) to pole No. 2.

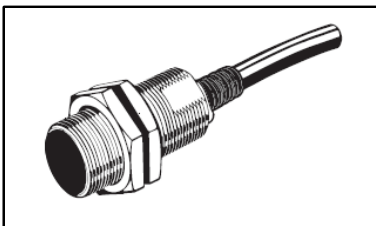
Caution!

During the installation of the system, keep in mind that the GRIPone control unit does not have an ON/OFF switch. For this reason, the power that is applied to the heads of Pole No. 5 and Pole No. 4 should come from underneath the key lock or through the main switch of the motorcycle (or through an appropriate switch) to avoid draining the main battery of the motorcycle (when the bike is off).

4. Installation of the Sensors

The GRIPone control unit uses two proximity sensors to detect the rotation speed of both wheels of the motorcycle. 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. It is important not to confuse the front sensor with the rear sensor when connecting two sensors. Please refer to the figure on the right to avoid making such an error. 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 of one or more metallic (ferrous) objects.





FRONT WHEEL

It is recommended to apply the sensor in correspondence with the fixing screws of the flange of the disk brakes through a rigid bracket fixed to the front fork. The sensor will, therefore, detect up to 6 pulses for every complete revolution of the wheel. The metallic parts that pass in proximity to the sensor (for example, the fixing screws of the disk brake) should have a surface and a cross section as flat as possible. **If hollow head screws are used, then the system will not function correctly. The pulses detected by the sensor should be a minimum of 3 and a maximum of 6. The screws or the ferrous bodies detected should be equidistant from one another.**

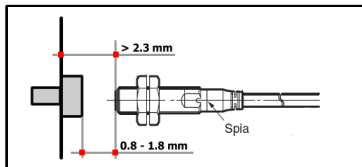
REAR WHEEL

It is recommended to apply the sensor in correspondence with the fixing screws of the rear crown or of the disk brakes. The sensor will, therefore, detect up to 6 pulses for every complete revolution of the wheel. The metallic parts that pass in proximity to the sensor (for example, the fixing screws of the disk brake) should have a surface and cross section that are as flat as possible. **If hollow head screws are used, then the system will not function correctly. The pulses detected by the sensor should be a minimum of 3 and a maximum of 6. The screws or the ferrous bodies detected should be equidistant from one another.**

POSITIONING

During the positioning of the sensors, it is necessary to verify the distance between the head of the sensor and the head of the ferrous object (for example, the fixing screws of the disk).

The sensors detect the passage of a ferrous object if it is not further away than 2 mm or closer than 0.5 mm. It is advised to set the distance between sensor and ferrous object between 1.3 mm and 0.8 mm.



Torque = 0.5 Kg/m

After having placed both sensors and having completed the electrical connections, power the GRIPONE control unit and turn the wheel to empty. If the sensors are correctly positioned, upon passing the ferrous material, the led display will light up on the back of the sensor itself.

IMPORTANT

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.

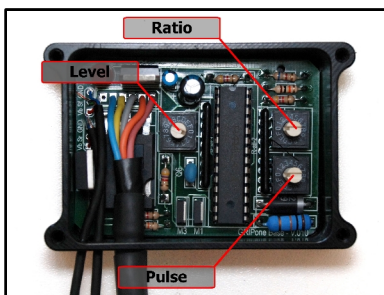
NUMBER OF PULSES

The number of pulses detected by the sensors for each complete wheel revolution is a very important factor in the functioning of the system. Equivalent to the speed of the motorcycle, a greater number of pulses allows the system to control with more frequency the rotation speed of the wheels and the status of the motorcycle's engine. In cases of sliding, the control unit will intervene with greater speed.

5. Configuration of the Control Unit

After having completed the electrical connections of the GRIPone control unit and having positioned the sensors in the manner indicated, to obtain the correct functioning of the system it is, then, necessary to set up three configuration parameters within the control unit. The setting of the three configuration parameters is done by positioning the three click registers located inside the control unit itself.

To continue, remove the four screws that secure the top cover of the control unit in order to gain access to the inside. Once the cover is removed, you will find various components inside the control unit as shown in the following figure. Each one of the three click registers is related to a parameter: Level, Ratio and Pulse.



The three above-listed parameters are substantially involved in the functioning of the control unit and, for this reason, must be set up in the correct manner before using the traction control system.

EXPLANATION OF THE CONFIGURATION PARAMETERS

Level

The **level** parameter determine the sensitivity of the control unit to the loss of adhesion of the motorcycle (due to the sliding of the rear wheel). The register is adjustable to 16 positions (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F) which are subdivided into two distinct groups.

The first group goes from position 0 to position 7 (included), while the second group goes from position 8 through position F (included).

Only one of the two groups may be used.

The choice of one of the two depends on the type of the engine rpm signal detected by the control unit.

If the engine rpm signal is detected by the sensor positioned on the camshaft (1 pulse every 2 drive shaft rpm), then the first group of values (from position 0 to position 7 included) should be used.

If the engine rpm signal is detected by the sensor positioned on the driveshaft or by the speedometer (1 pulse every drive shaft rpm), then the second group of values (from position 8 to position F included) should be used.

The first value of every group (0 for the first group and 8 for the second group) corresponds to the disabling of the control system (whatever the running condition of the motorcycle may be). In this case, the control unit does not exercise any type of control be it under normal running conditions or in the presence of sliding.

The next value of each group (1 for the first group and 9 for the second group) corresponds to the configuration for less sensitivity. In this case, the GRIPone control unit exercises a slight control only in the presence of an elevated level of sliding. Scrolling upwards through the values of each group (towards value 7 of the first group and towards value F of the second group) increases the sensitivity of the control system. When increasing the sensitivity of the system, less sliding is needed for the traction control to be ignited. Increasing the sensitivity of the system will also increase the level of control that the GRIPone control unit exercises over the engine.

Pulse

The PULSE parameter informs the GRIPone control unit of the number of pulses detected by the two speed sensors for each 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 table 1.

Ratio

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 2. The development of the tires should be measured using a measuring tape in proximity to the center of the wheel.

Table 1 – Pulse Parameter Setting

REAR WHEEL PULSES	FRONT WHEEL PULSES	VALUE TO SET
3	3	0
3	4	1
3	5	2
3	6	3
4	3	4
4	4	5
4	5	6
4	6	7

REAR WHEEL PULSES	FRONT WHEEL PULSES	VALUE TO SET
5	3	8
5	4	9
5	5	A
5	6	B
6	3	C
6	4	D
6	5	E
6	6	F

Table 2 – Ratio Parameter Setting

		REAR WHEEL DIMENSION (mm)																
		1950	1960	1970	1980	1990	2000	2010	2020	2030	2040	2050	2060	2070	2080	2090	2100	
FRONT WHEEL DIMENSION (mm)	1850	6	6	8	8	9	9	B	B	C	C	D	D	E	E	F	F	
	1860	4	6	6	8	8	9	9	B	B	C	C	D	D	E	E	F	
	1870	4	4	6	6	8	8	9	9	B	B	C	C	D	D	E	E	
	1880	3	4	4	6	6	8	8	8	9	9	B	B	C	C	D	D	E
	1890	3	3	4	4	6	6	8	8	9	9	B	B	C	C	D	D	
	1900	2	3	3	4	4	6	6	8	8	9	9	B	A	C	C	D	
	1910	2	2	3	3	4	4	6	6	8	8	9	9	A	A	C	C	
	1920	1	2	2	3	3	4	4	6	6	8	8	9	9	A	A	C	
	1930	1	1	2	2	3	3	4	4	6	6	8	7	9	9	A	A	
	1940	0	1	1	2	2	3	3	4	4	6	6	7	7	9	9	A	
	1950	0	0	1	1	2	2	3	3	4	4	5	5	7	7	9	9	
	1960		0	0	1	1	2	2	3	3	4	4	5	5	7	7	9	
	1970			0	0	1	1	2	2	3	3	4	4	5	5	7	7	
	1980				0	0	1	1	2	2	3	3	4	4	5	5	7	
	1990					0	0	1	1	2	2	3	3	4	4	5	5	
	2000						0	0	1	1	2	2	3	3	4	4	5	
	2010							0	0	1	1	2	2	3	3	4	4	
2020								0	0	1	1	2	2	3	3	4		
2030									0	0	1	1	2	2	3	3		
2040										0	0	1	1	2	2	3		
2050											0	0	1	1	2	2		

Once the position of the three click registers is set, close the control unit and screw the top back in with the four screws.

COMMENTS

The optimal configuration of the GRIPone system depends on various factors.

The functioning may vary based on the type of motorcycle on which it is installed. If the motorcycle has a four-cylinder engine, the electronic intervention in case of drifting will be different with respect to that which would be obtained by two-cylinder engines.

Another factor to take into consideration is the profile of the tires used. Using the "racing" type of rear wheel, the real rolling of the tire will greatly vary due to the angle of bend of the motorcycle. The GRIPone system could react very sensitively to a "low" bend angles and less sensitively to intermediary bend angles. A third factor that affects the functioning of the system is the driving style of the rider of the motorcycle.

If the rider is accustomed to revving the gas, the GRIPone system will be activated with more frequency as opposed to when the rider does so more slowly.

After having run the first configuration of the Pulse and Ratio parameters, it is recommended to configure the Level parameter based on the experience of the rider. For professional and semiprofessional riders, it is recommended to start off with an intermediate value (value 3 for the first group and value B for the second group) for the Level parameter. For non-professional riders, it is advised to use more conservative values (6 for the first group and E for the second group).

Be aware that **the use of the traction control system does not prevent falls caused by the inappropriate use of the gas**. For this reason, it is recommended to experiment with the functioning of the system by taking repeated tests or small steps. Only after having gained full confidence in using the system and having clearly understood how the system works, you can try to adjust the Level parameter. About the Level parameter, remember that by moving the value towards the 0 (or the 8 for the second group) reduces the effect of the system, while moving towards the 7 (or the F for the second group) increases the effect of the system.

Take into consideration that the Level parameter adjusts the point of ignition of the system (moving the sliding threshold toward high or low) and, at the same time, the type of power cutting on the propulsion system.

Once a good compromise is found (especially regarding the power cutting) among the settings available, the system offers greater possibility for setting adjustments.

Once the right configuration of the Level parameter is found and having appreciated the control of power, you can adjust the Ratio parameter to anticipate or postpone the ignition without changing the power cutting. Modifying the Ratio parameter, in fact, may "fool" the GRIPone system on the real ratio between the tires.

If you move one or two clicks toward the F value, you will achieve greater sensitivity to the sliding, while if you move one or two clicks toward the 0 (zero) value, you will achieve a lesser degree of sensitivity to the sliding.

		Ruota posteriore (mm)															
		1950	1960	1970	1980	1990	2000	2010	2020	2030	2040	2050	2060	2070	2080	2090	2100
ore (mm)	1850	6	6	8	8	9	9	B	B	C	C	D	D	E	E	F	F
	1860	4	6	6	8	8	9	9	B	B	C	C	D	D	E	E	F
	1870	4	4	6	6	8	8	9	9	B	B	C	C	D	D	E	E
	1880	3	4	4	6	6	8	8	9	9	B	B	C	C	D	D	E
	1890	3	3	4	4	6	6	8	8	9	9	B	B	C	C	D	D
	1900	2	3	3	4	4	6	6	8	8	9	9	B	A	C	C	D
	1910	2	2	3	3	4	4	6	6	8	8	9	9	A	A	C	C
	1920	1	2	2	3	3	4	4	6	6	8	8	9	9	A	A	C
	1930	1	1	2	2	3	3	4	4	6	6	8	7	9	9	A	A
	1940	0	1	1	1	2	3	4	4	6	6	8	7	9	9	A	A

<< -Sensitive (4) 6 (7) +Sensitive >>

6. Features

Power:	Min 12 Volt - Max 24 volt
Dimension	78x52x28 (mm)
Weight:	200g
Min operational speed:	approximately 30 Km/h
Max operational speed:	approximately 360 Km/h
Max operational RPM:	approximately 20000 RPM
Front tyre dimension min configuration:	185 cm
Front tyre dimension max configuration:	220 cm
Rear tyre dimension min configuration:	185 cm
Rear tyre dimension max configuration:	220 cm
Wheel pulses:	Max:6 – Min:3

KITS and PARTS

Description	Code	Note
Kit GRIPone BASE	KGRIPONE-BASE	Contents: GRIPone BASE control unit, inductive sensors of speed (wired), user's manual
GRIPone BASE control unit	CGRIPONE-BASE	
Inductive speed sensor	VSSENS-NPN	Not wired
3-pole female connector	C3P-FEMALE	Complete connector to solder
3-pole male connector	C3P-MALE	Complete connector to solder
5-pole female connector	C5P-FEMALE	Contact container
5-pole male connector	C5P-MALE	Contact container
5-pole female contact connector	CC-SUPERSEAL-FEMALE	Contacts to crimp
5-pole male contact connector	CC-SUPERSEAL-MALE	Contacts to crimp
Seal – conductor	GT-SUPERSEAL	
5-pole connector Cover	CC-SUPERSEAL	

Speed Sensor:

Typology: inductive proximity;

POWER: 12-24 Volt;

EXIT: NPN NO – open collector;

Shielded: YES;

Distance of Detection: up to 2mm;

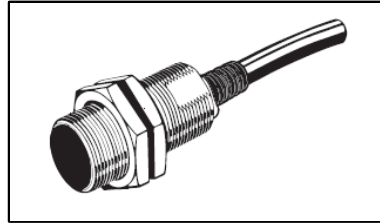
Work Frequency: 0 – 1500 Hz;

Dimensions: M8 x 1;

Operating Temperature: -40° +85°;

Coating Material: Stainless Steel;

Torque: maximum 0.5 Kg/m;



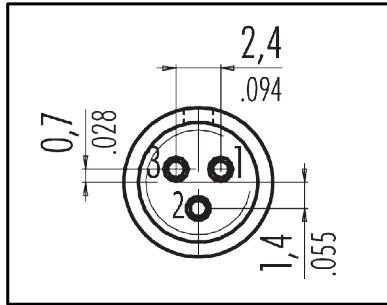
Pin-Out

(3) Brown: power (+12v);

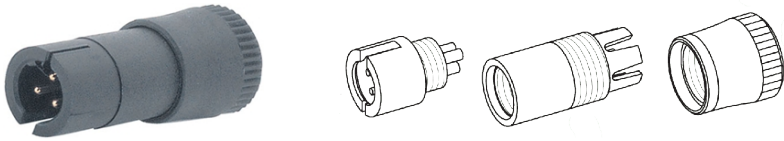
(1) Blue: GND;

(2) Black: Signal;

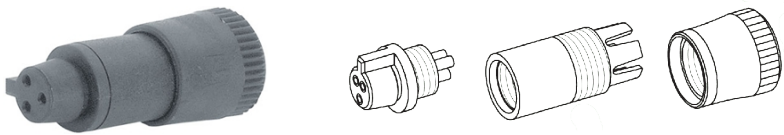
The figure to the right shows how to correctly wire the speed sensor to the 3-pole connector. The graphic is intended to show a visual of the soldered side.



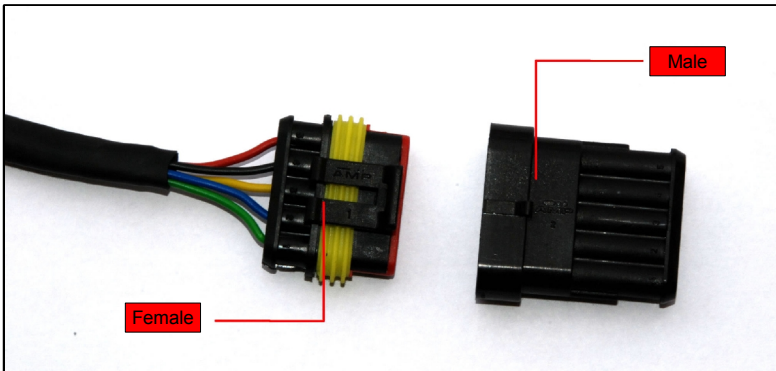
3 pole male connector



3 pole female connector



Superseal 5-pole Connector



Note

Empty rectangular area for notes.



More informations available on web site <http://www.diegogubellini.com>

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gubellini

Dealer:



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