TECHNICAL TRAINING

SALES DIVISION

JET FORCE

PRESENTATION OF THE MACHINE

réf :.JET.010.02/2003.GB

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CHARACTERISTICS

Engine

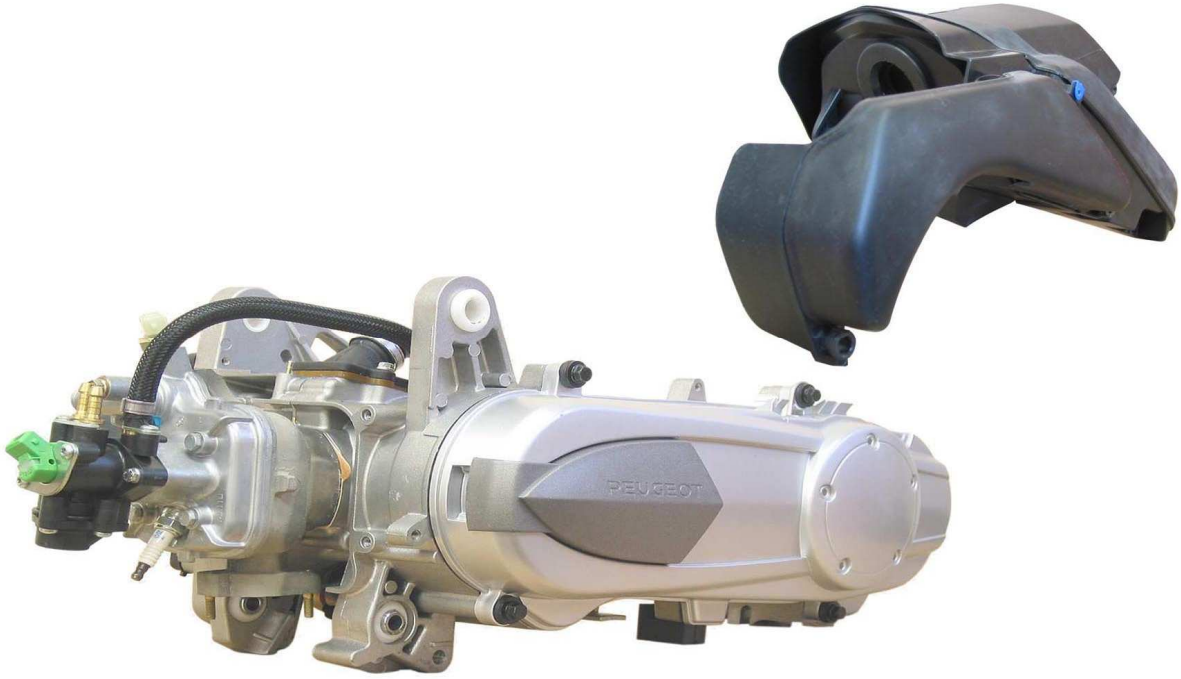
	50 cm³	**125 cm³**
Type	Single cylinder 2-stroke direct injection	Single cylinder 4-stroke indirect injection
Cooling	Liquid	
Bore x stroke	39.9 x 39.8 mm	57 x 48.9 mm
Cubic capacity	49.9 cc	124.8 cc
Max. power output	3.75 kW at 7500 rpm	9.2 kW at 8750 rpm
Max. torque at	6500 rpm	7250 rpm
Fuel system	Direct electronic injection (TSDI)	Indirect electronic injection (EFI)
Lubrication	Electric oil pump	Trochoidal pump
Transmission	2 variable pulleys and Vee belt	
Clutch	Centrifugal automatic	
Spark plug	NGK CPR8E	NGK CR7EB
Exhaust	Catalytic	Non-catalytic

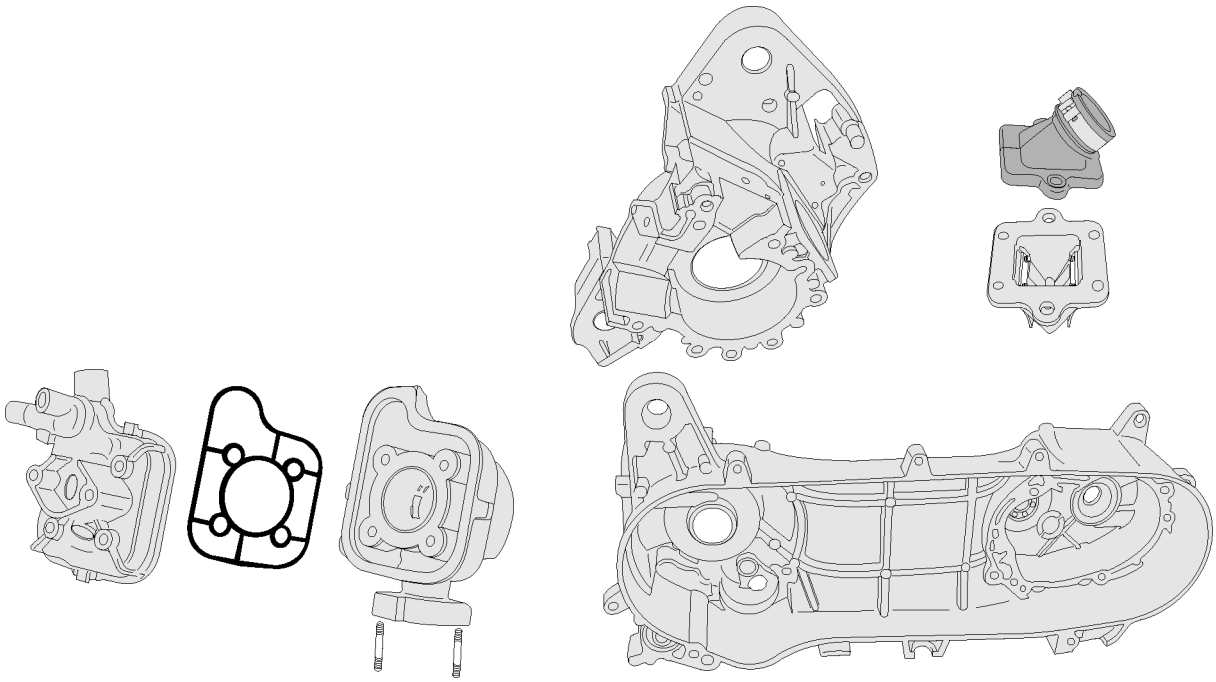
Dimensions and weight

Overall length	1914 mm	1918 mm
Width at handlebar	740 mm	
Height with rear view mirror	1260	1279
Wheelbase	1314 mm	1369 mm
Saddle height:	820 mm	845 mm
Unladen weight	115 kg	149 kg

50 CC ENGINES
50 cc 2-stroke TSDI liquid cooled engine

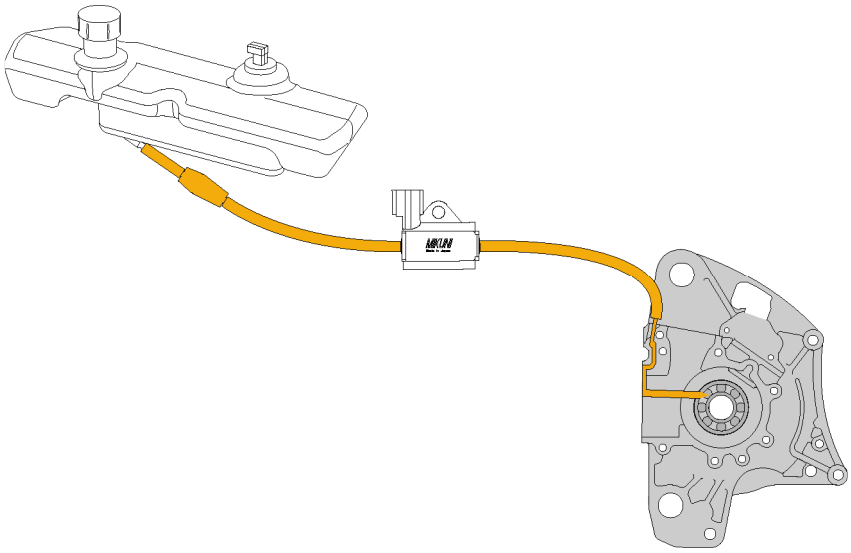
45 km/h version
Sport version
Unlimited version (registered)



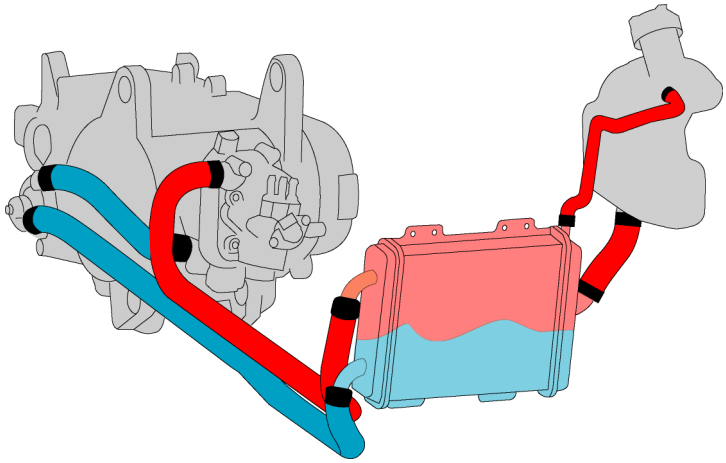


Description
HL1 engine marking

Separate lubrication
1.2 l tank capacity



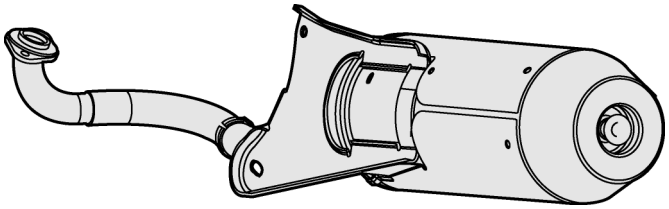
Cooling
1.2 l capacity

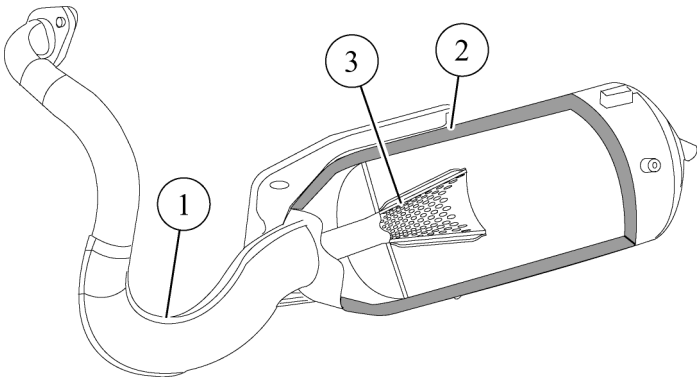


CATALYTIC EXHAUST

Composition of the catalytic exhaust system:

The catalytic exhaust system is distinguished by the fitting of a « catalyser cone » just after the exhaust inlet cone. All the exhaust gases are fed through the catalyser cone.





1. Exhaust pipe
2. Heat insulation
3. Catalyser cone

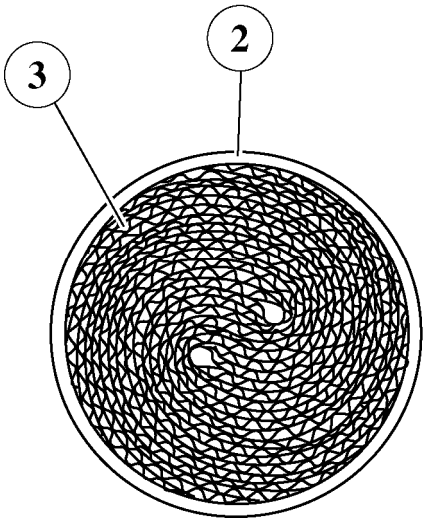
FUNCTIONING OF THE CATALYTIC CONVERTER EXHAUST

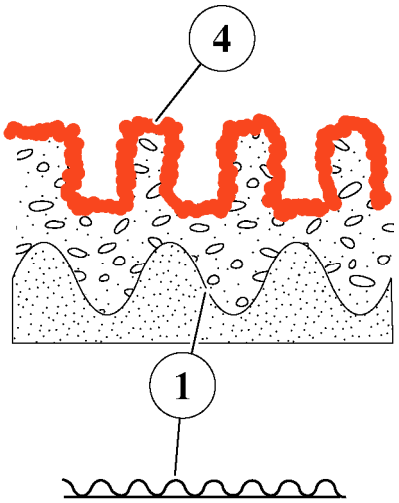
Definition

The catalyser is a block used to facilitate and acceleration chemical reactions without being modified itself

Composition of the catalytic block

The catalytic block is composed of a metal grid, impregnated with precious metals, rolled inside a steel tube forming a honeycomb.





1. Metal grid
2. Steel tube
3. Honeycomb
4. Impregnation with precious metals (Platinum, palladium, rhodium, etc...)

INJECTION SYSTEMS / TSDI IGNITION

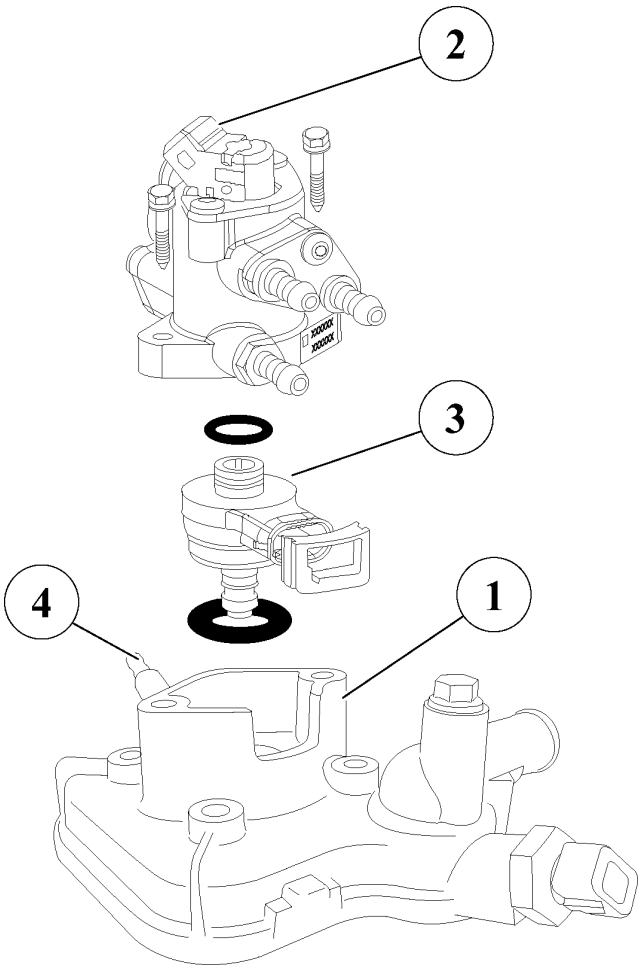
Introduction

Of the throttle angle / engine speed type, the SYNERJECT system was developed for the following applications:

Monopoint sequential injection
Static timing

The system basic principle consists in measuring the engine speed and load (throttle opening) in order to determine the optimum quantity of fuel injected

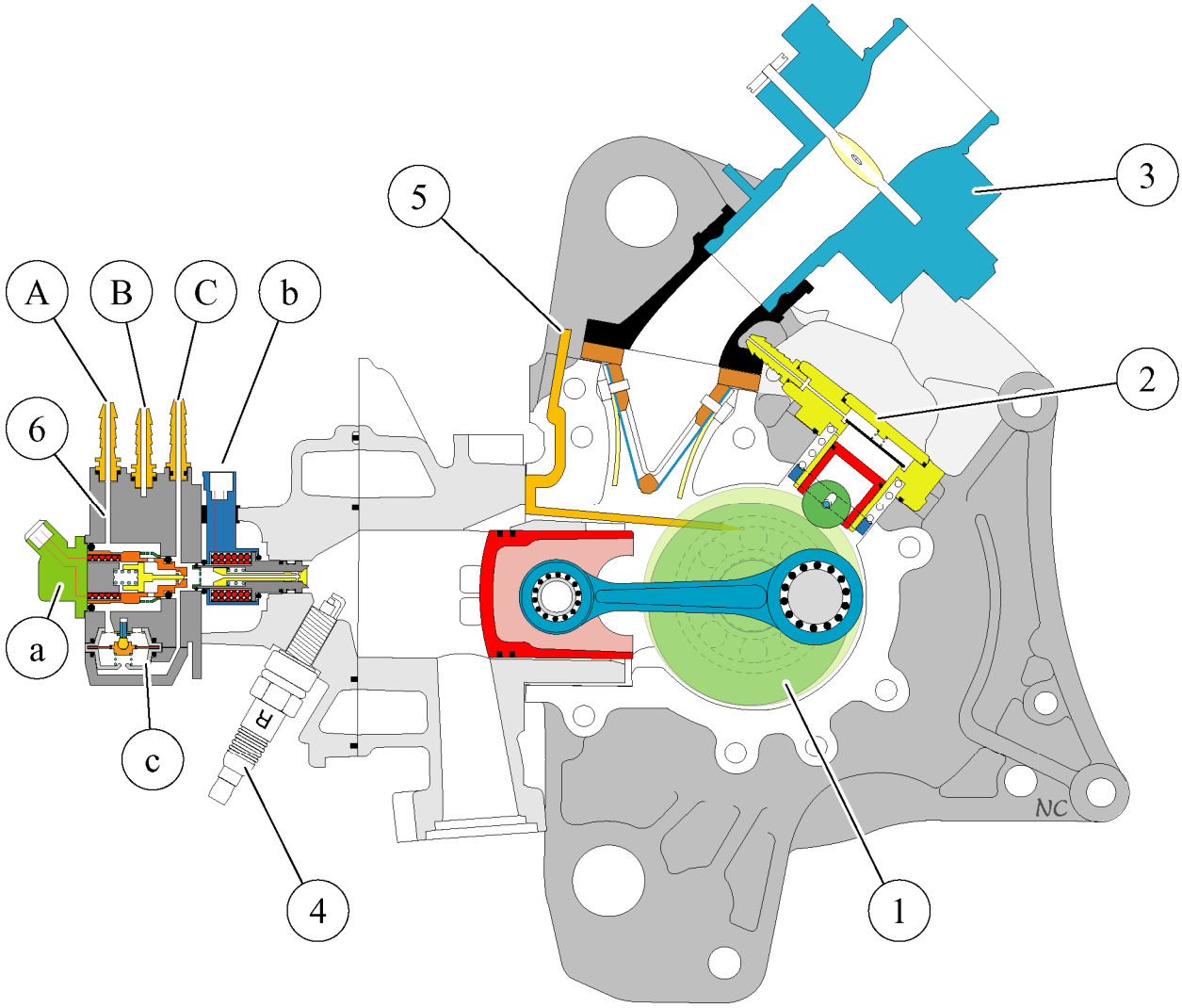
This system is used on the JET FORCE 50 scooter and requires NO ADJUSTMENT
(Ditto Looxor and Elystar 50 cc).



1. Cylinder head
2. Petrol injector
3. Air injector
4. Spark plug

SYSTEM COMPONENTS

Functioning principle

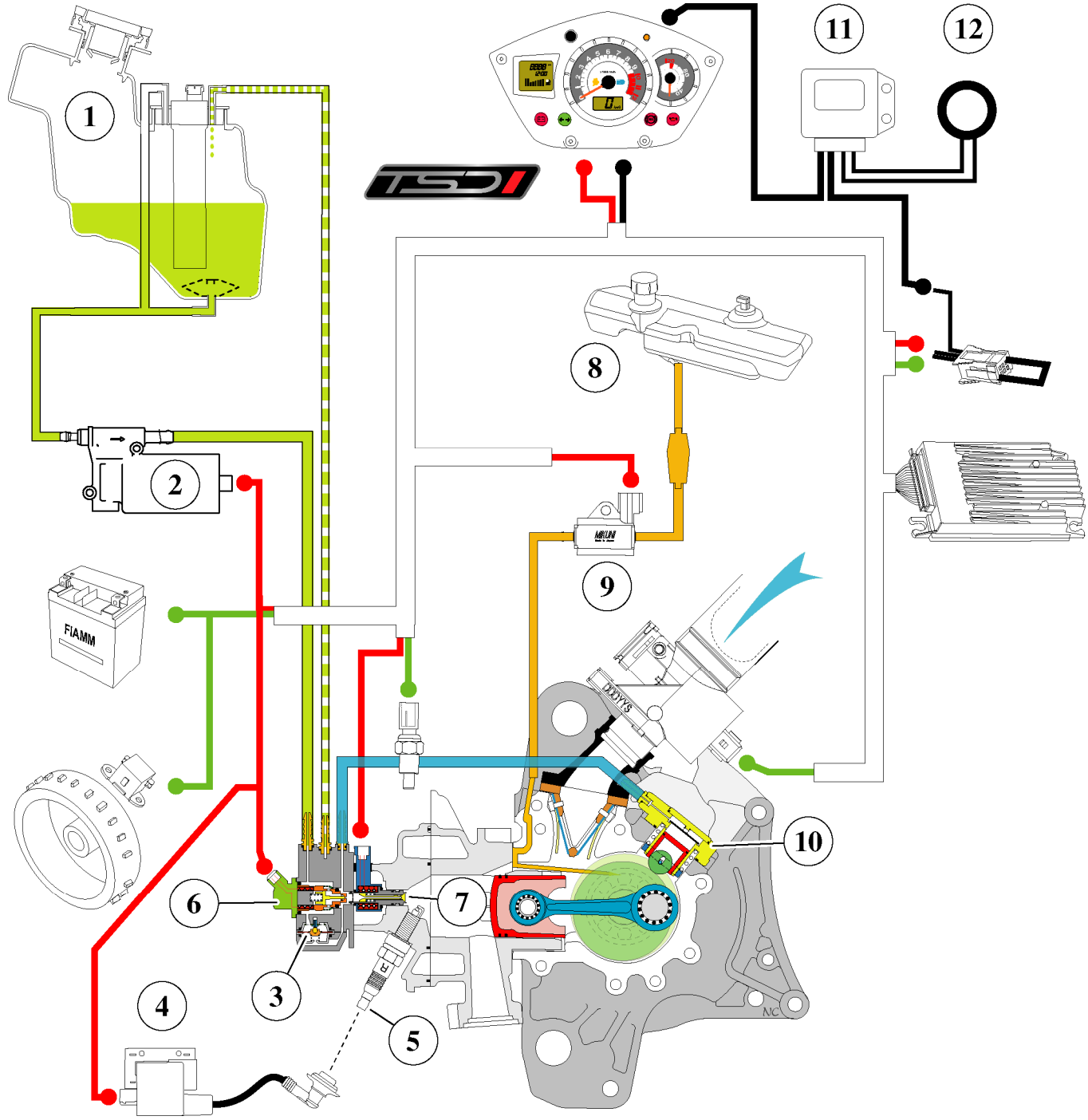


1. Crank assembly
2. Compressor
3. Throttle unit
4. Spark plug
5. Lubrication system
6. Feed rail

a / petrol injector
b / air injector
c/ petrol pressure regulator

A. Fuel inlet
B. Fuel return
C. Pressurised air inlet

PRESENTATION OF THE 2 STROKE INJECTION SYSTEM



Fuel system
1. Fuel tank
2. Fuel pump
3. Pressure regulator

Ignition system:
4. Coil and suppressor
5. Resistive spark plug

Injection system
6. Petrol injector
7. Air injector

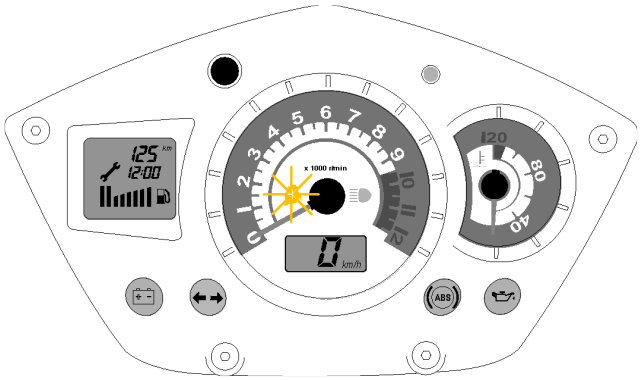
Lubrication system
8. Oil tank
9. Oil pump

Compressed air circuit
10. Compressor

Transponder circuit
11. Immobiliser module
12. Transponder

DIAGNOSTIC

Warning



A LED comes on on the instrument cluster to warn the rider of a fault on the injection and ignition system ELECTRICS

Fault processing principle

Three priority levels

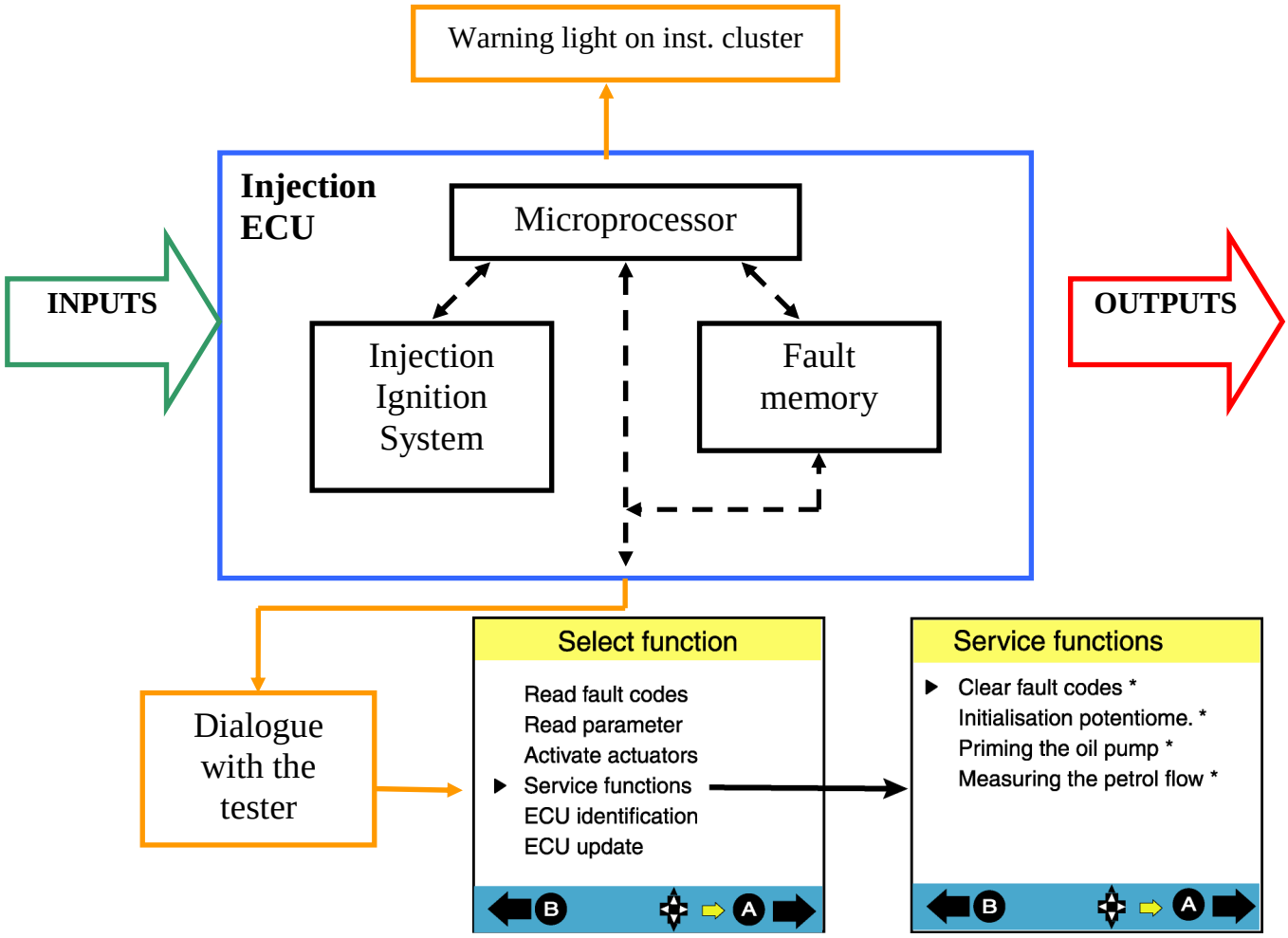
1 - " serious safety " fault: fault memorised in ECU and LED stays on

2 - " serious " fault: fault memorised in ECU and LED flashes

3 - " minor " fault: fault memorised in the ECU without lighting the warning light

Note: When the ignition is turned on, the LED stays on to check it is functioning correctly

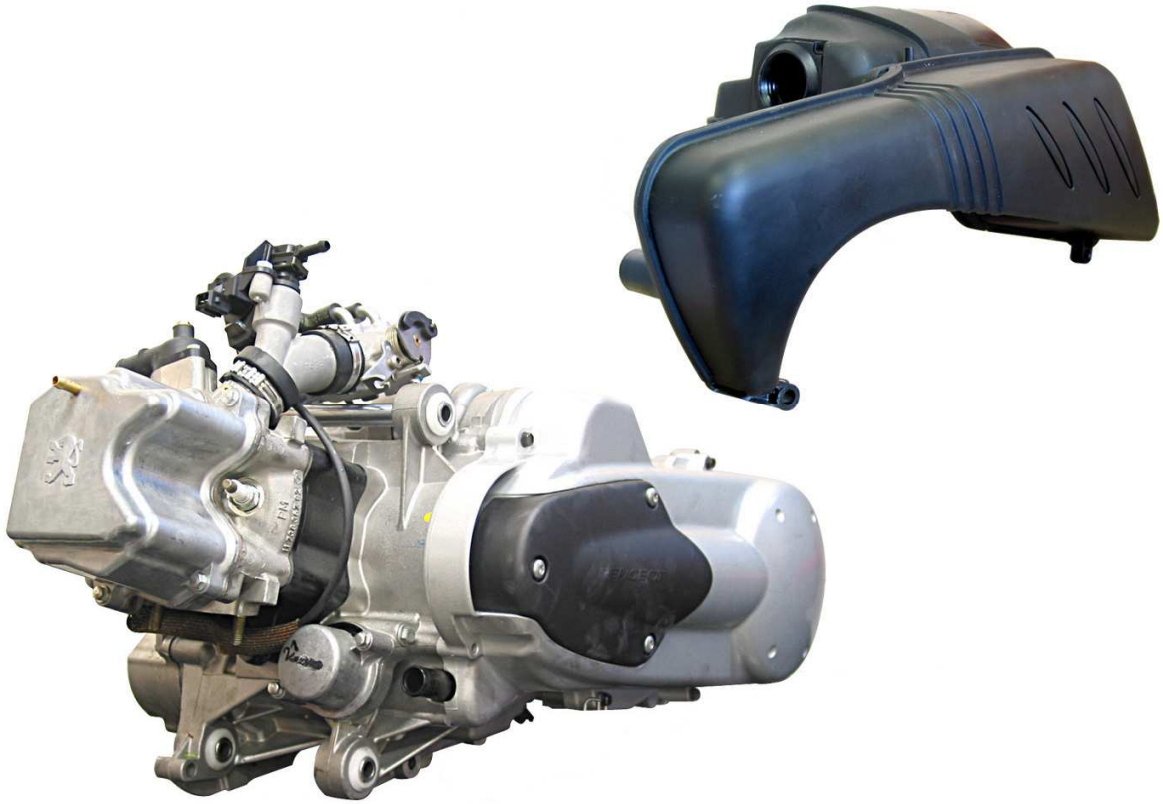
Self-diagnostic principle

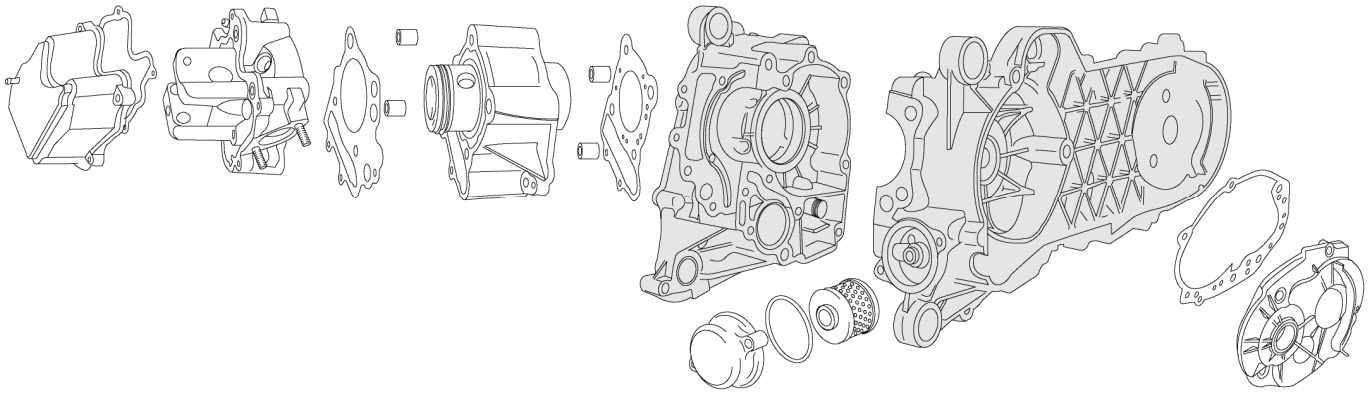


125 CC ENGINES

125 cc 4-stroke EFI liquid cooled engine

Naturally aspirated version
Turbo version (compressor)

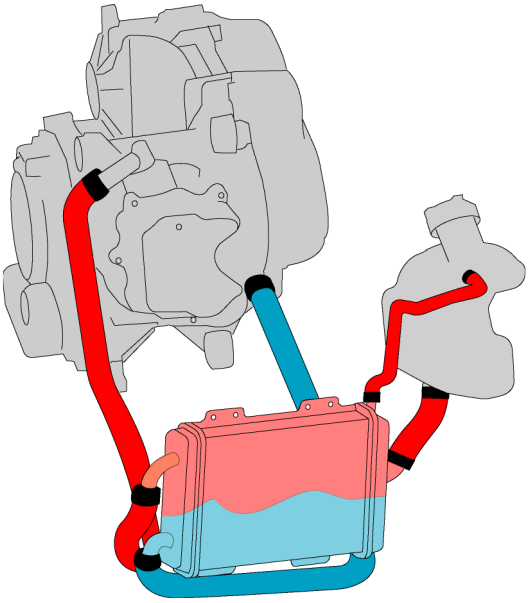




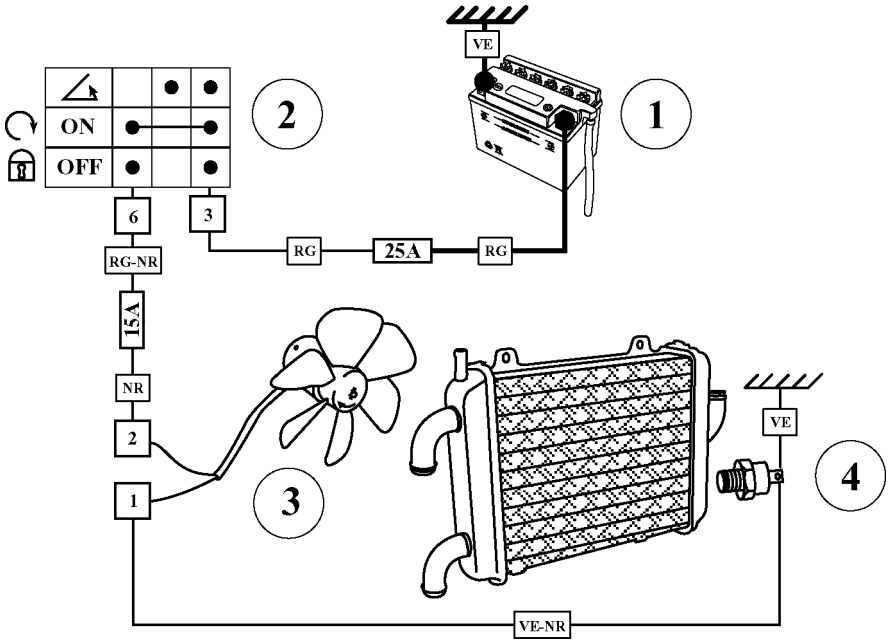
Description
FD5 engine markings

Lubrication
1.25 l capacity

Cooling
1.5 l capacity



Cooling system functioning principle



1. Battery
2. Ignition switch
3. Fan
4. Heat switch

INTRODUCTION

Of the throttle angle / engine speed type, the EFI system was developed for the following applications:
Monopoint sequential injection
Static timing

The system basic principle consists in measuring the engine speed and load (throttle opening) in order to determine the optimum quantity of fuel injected

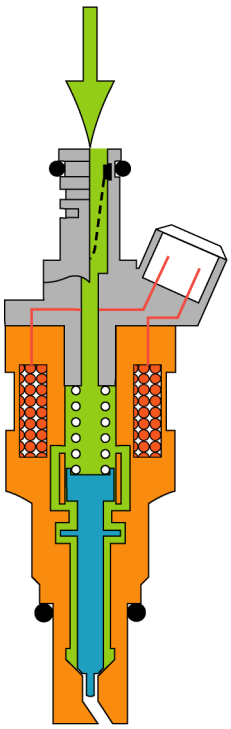
This system is used on the JET FORCE 125 scooter and requires NO ADJUSTMENT
(Ditto Elystar 125 – 150 cc)

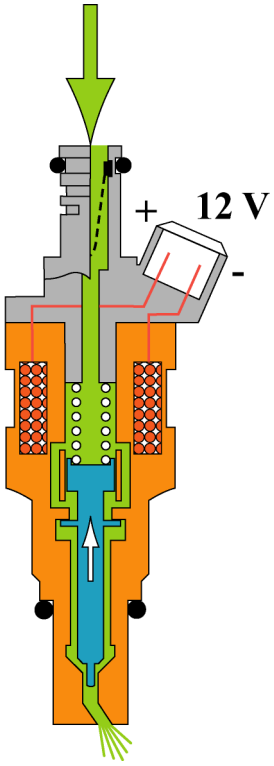
ADVANTAGES OF THE INJECTION SYSTEM

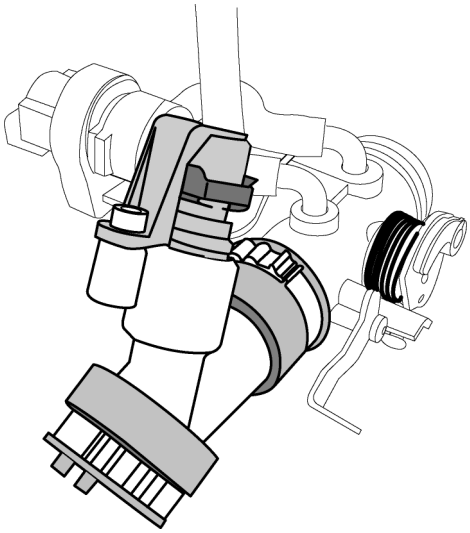
Peugeot Motocycles has developed a new generation of engines. Cleaner, more reliable, more economical, these engines comply with the most stringent emission control standards, whilst maintaining a very high level of performance. There are many advantages :
- Reduction in polluting emissions
- Reduction in fuel consumption
- Improved rider comfort

Fuel injector

The injectors are of the electro-magnetically operated single-jet type
The ECU electrical pulses generate a magnetic field in the magnet winding, the core is attracted, the injector plate raised off its seat and releases the pressurised fuel upline of the inlet valve

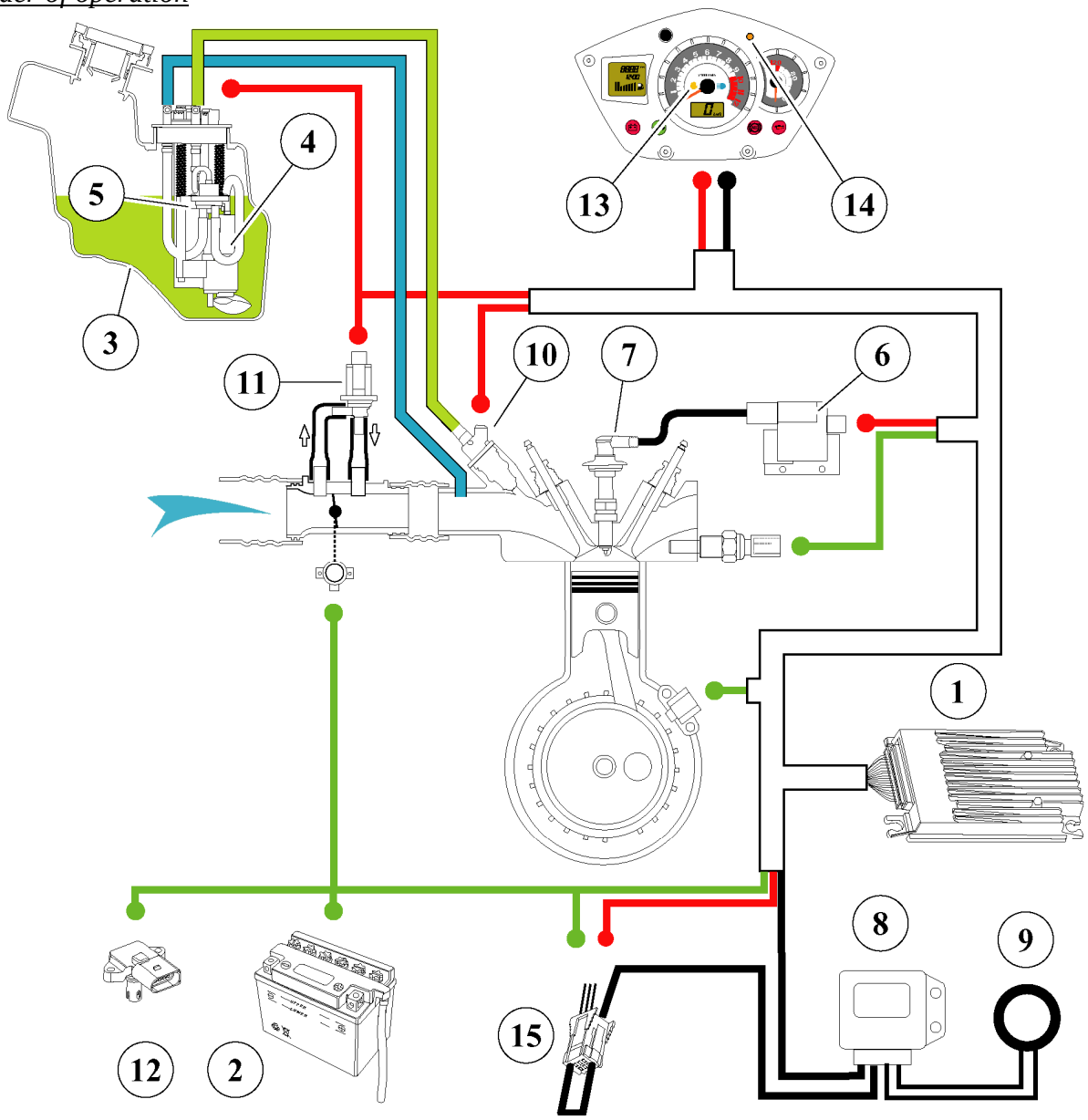






INJECTION SYSTEM / EFI IGNITION

Reminder of operation



1. ECU
2. Battery

Fuel system
3. Fuel tank
4. Fuel pump
5. Pressure regulator

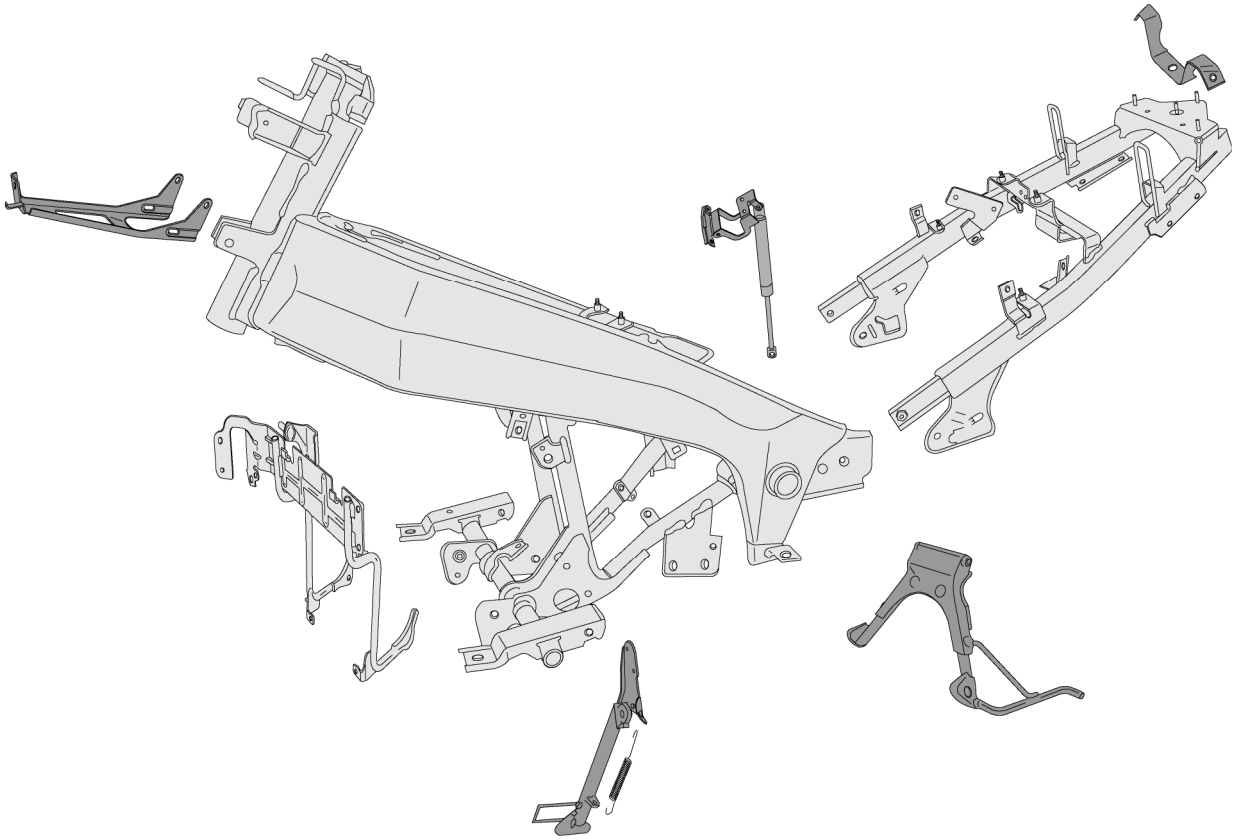
Ignition system:
6. HT coil
7. Resistive spark plug and suppressor

Transponder circuit
8. Transponder module
9. Transponder

Injection system
10. Petrol injector
11. Idle control valve
12. Air pressure and air temperature sensor

Diagnostic circuit
13. Injection diagnostic lamp
14. Transponder diagnostic lamp
15. Diagnostic plug

FRAME
Frame



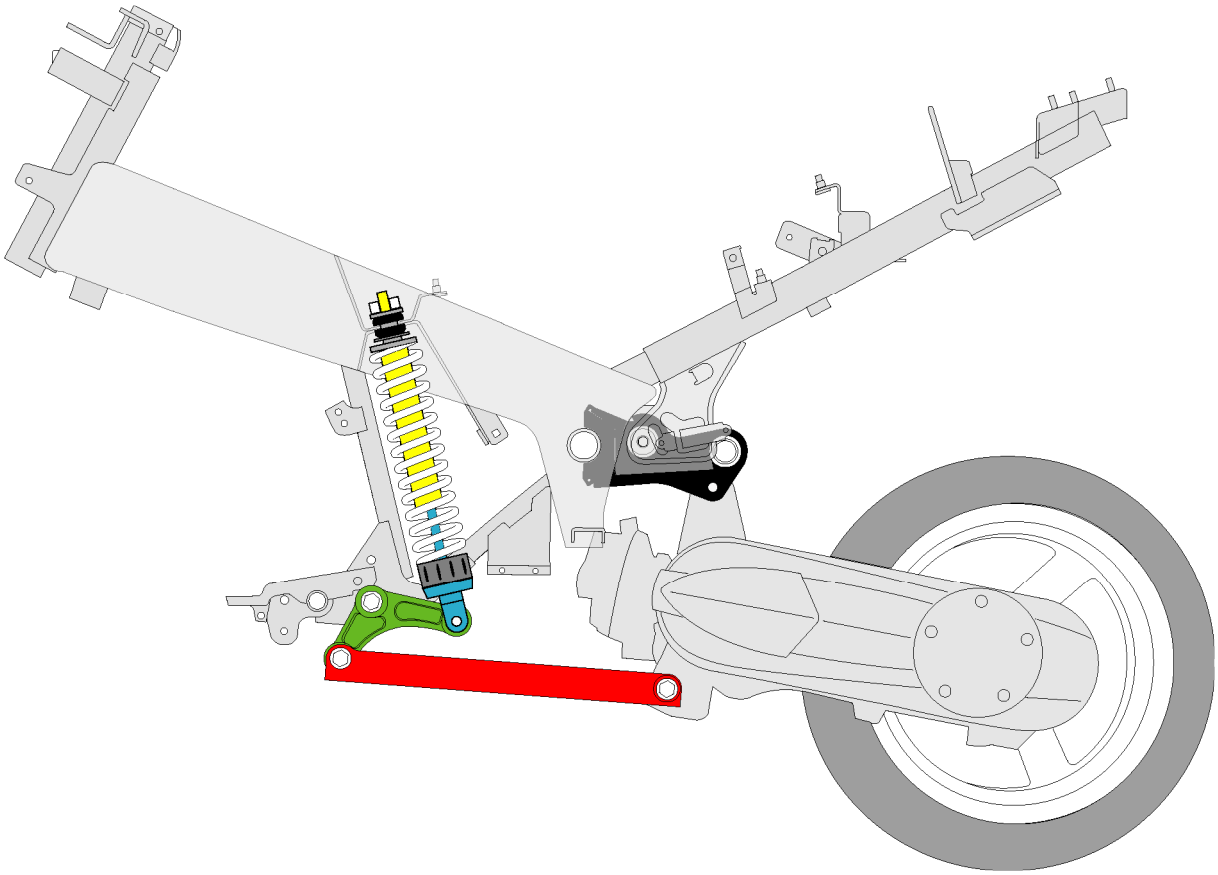
Steel wrap-round frame (DIRECT PERIMETRIC FRAME - DPF)

Suspension

	50 cm^3
Front suspension:	Ø 32 mm hydraulic telescopic fork
Travel	85 mm
Rear suspension	Central hydraulic shock absorber
Travel	95 mm

Tyres

Front wheel	13-inch alloy
Front tyre	130/60 - 13
Front tyre pressure	2 bar
Rear wheel	13-inch alloy
Rear tyre	130/60 - 13
Rear tyre pressure	2,2 bar

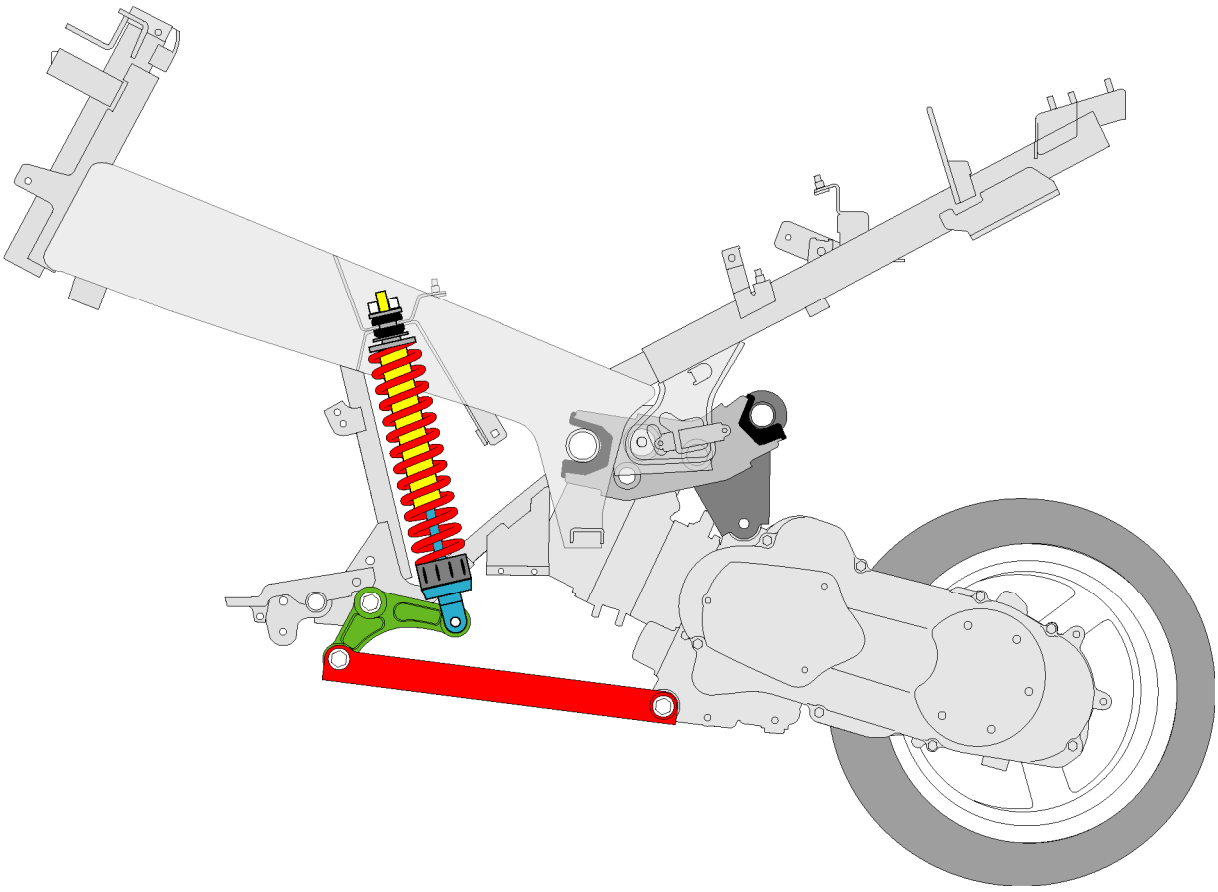


Suspension

	125 cm^3
Front suspension	Ø 36 mm hydraulic telescopic fork
Travel	95 mm
Rear suspension	Central hydraulic shock absorber
Travel	90 mm

Tyres

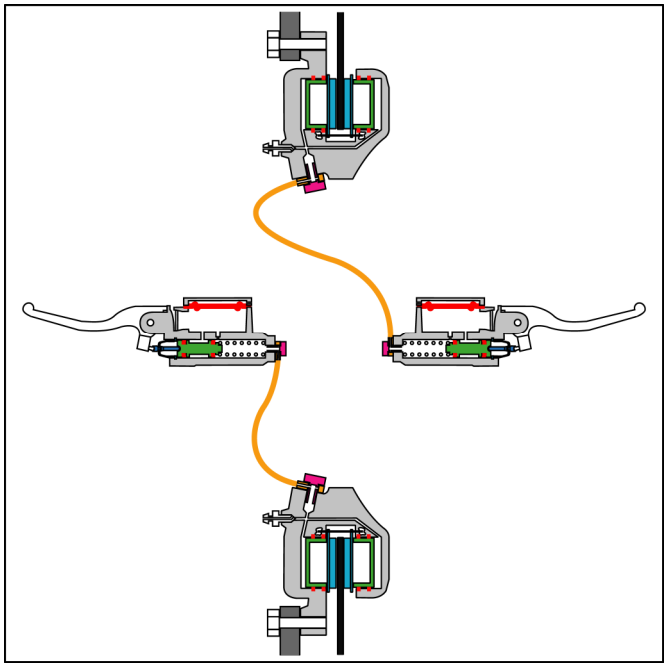
Front wheel	13-inch alloy
Front tyre	130/60 - 13
Front tyre pressure	2 bar
Rear wheel	13-inch alloy
Rear tyre	140/60 - 13
Rear tyre pressure	2,2 bar



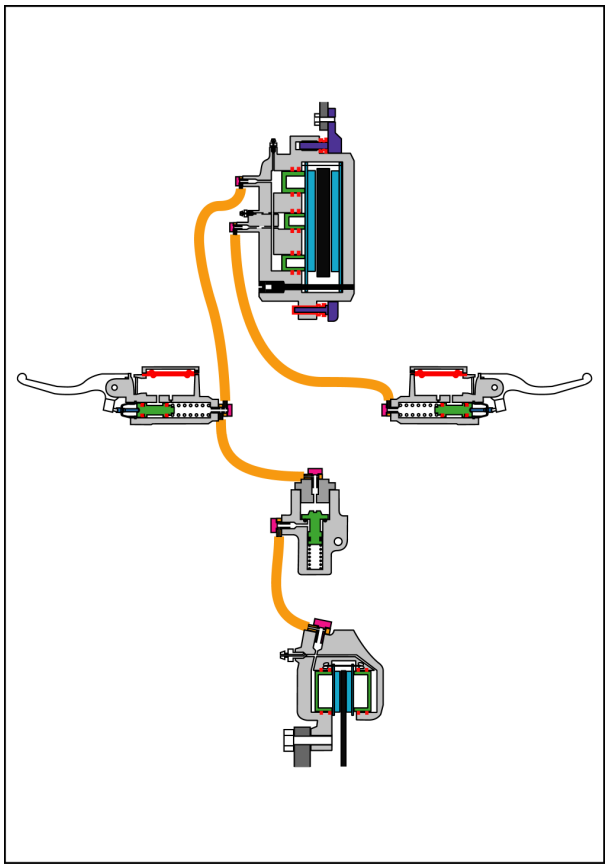
BRAKES

Reminder of functioning of the different braking systems

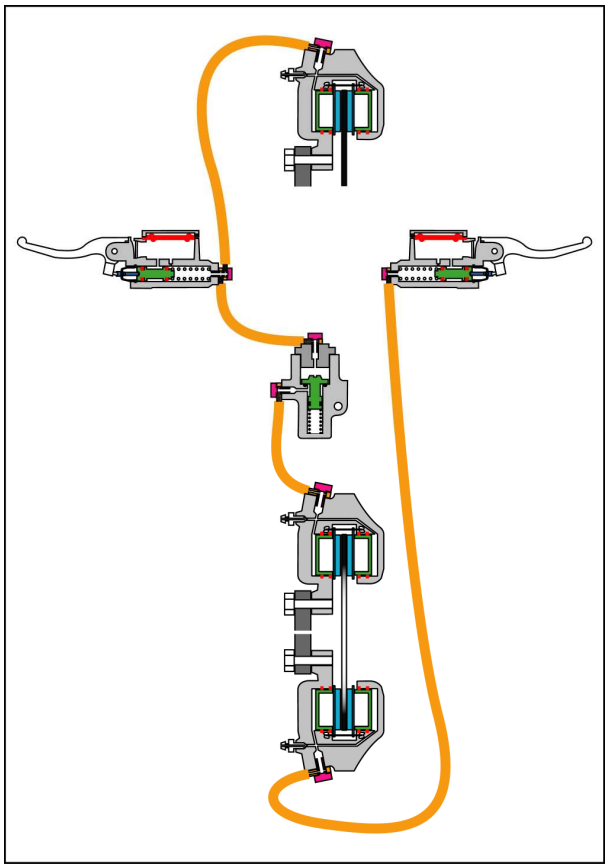
Conventional hydraulic system



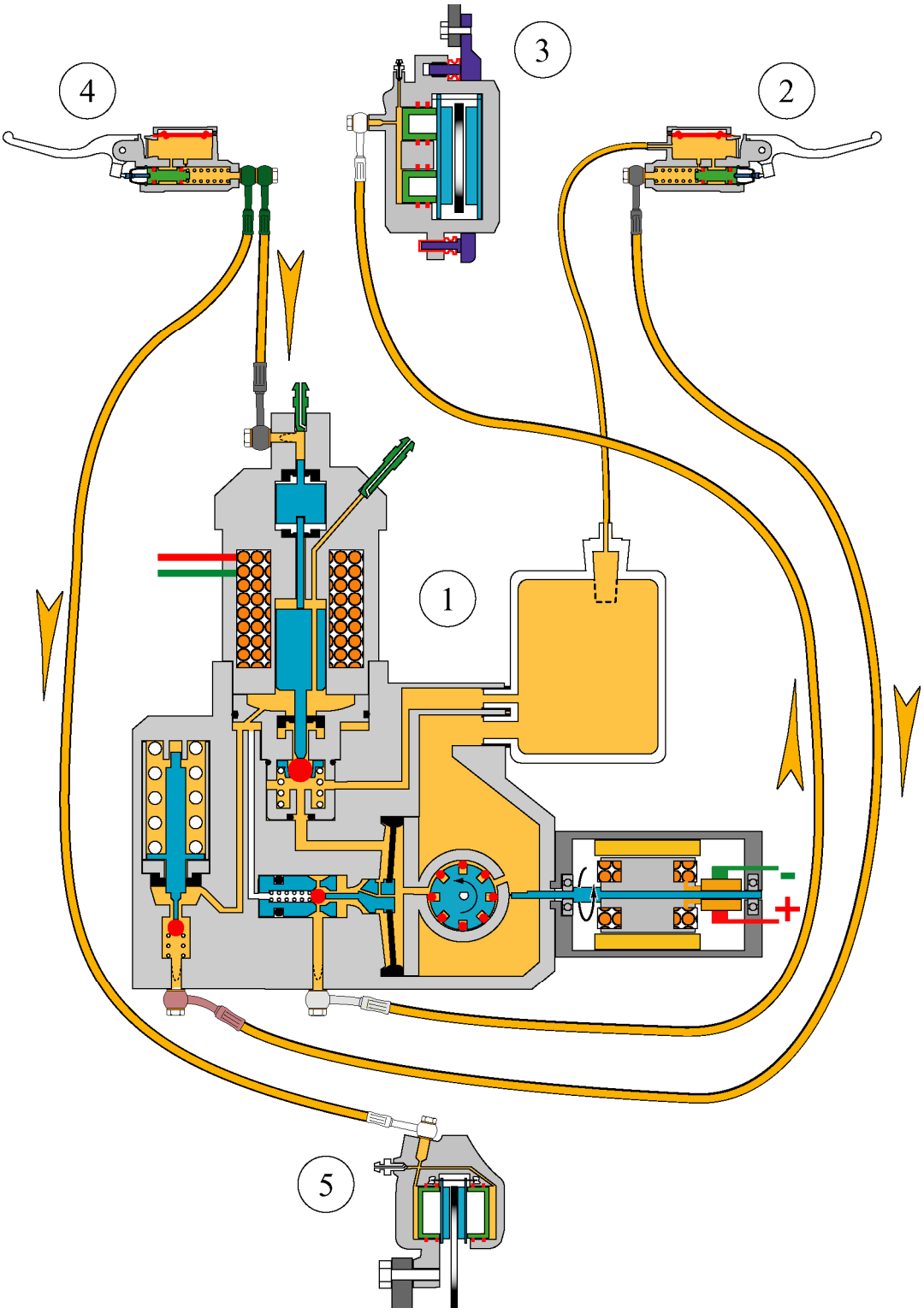
SBC integral hydraulic braking system



SBC2 integral hydraulic braking system

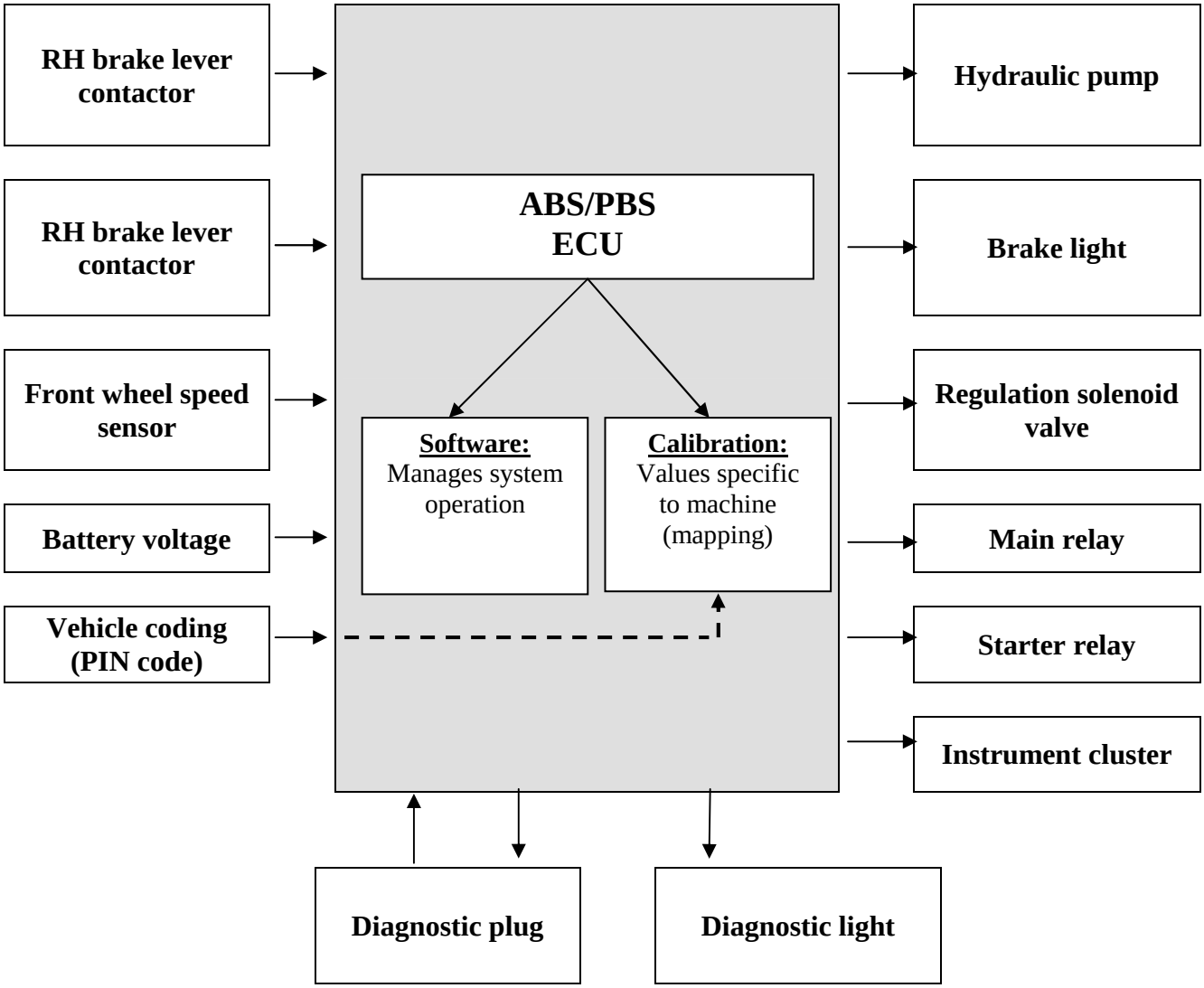


ABS/PBS hydraulic braking system

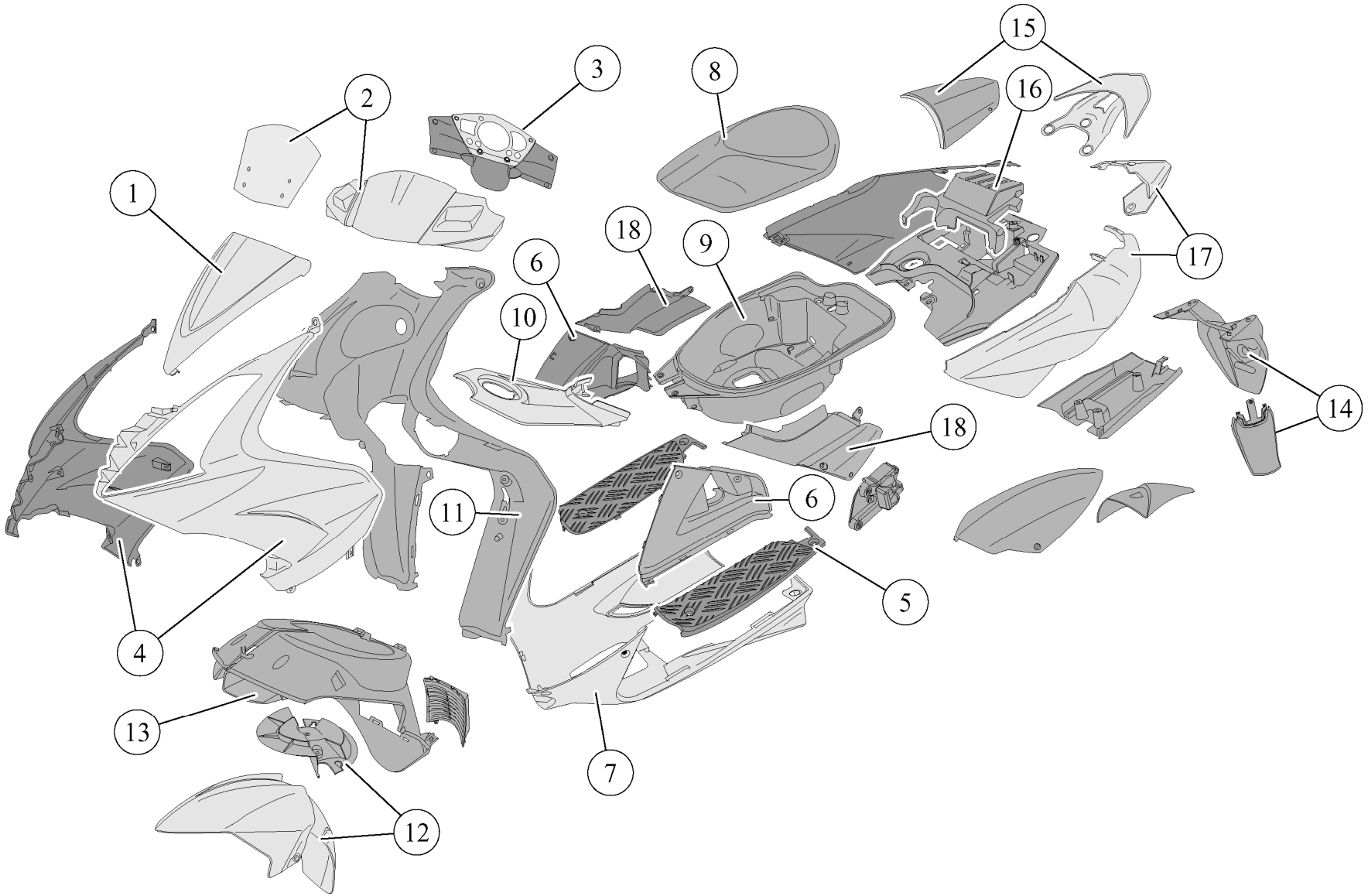


1. Braking control unit
2. Right-hand brake master cylinder (emergency brake)
3. Front brake caliper
4. Left-hand brake master cylinder (integral brake)
5. Rear brake caliper

ABS/PBS SYSTEM SYNOPTICS



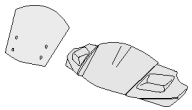
BODY PANELS



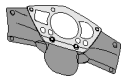
BODY PANELS

LEGSHIELD TOP PANEL **(1)**

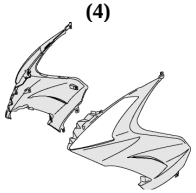
HANDLBAR FRONT FAIRING **(2)**



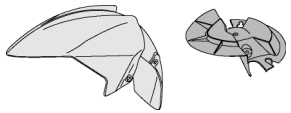
HANDLEBAR REAR FAIRING **(3)**



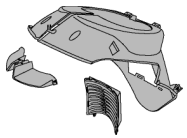
FRONT LOWER LEGSHIELDS **(4)**



MUDGUARD AND FORK GUARD **(12)**

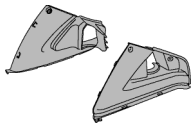


MUDGUARD **(13)**

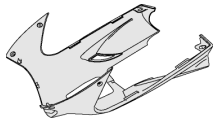


FOOTBOARDS **(5)**

TUNNELS **(6)**

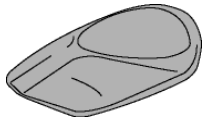


BELLYPAN **(7)**

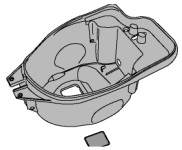


LEGSHIELD REAR PANEL **(11)**

RIDER SADDLE **(8)**



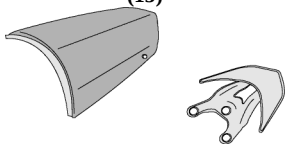
STORAGE COMPARTMENT **(9)**



FUEL TANK FAIRING **(10)**

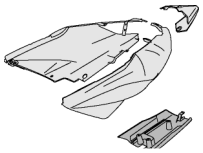
MUDFLAP AND NUMBER PLATE PANEL **(14)**

PASSENGER SADDLE AND GRAB HANDLE **(15)**

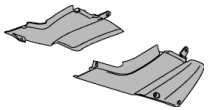


BATTERY COVER **(16)**

REAR FAIRING AND IMMOBILISER UNIT **(17)**

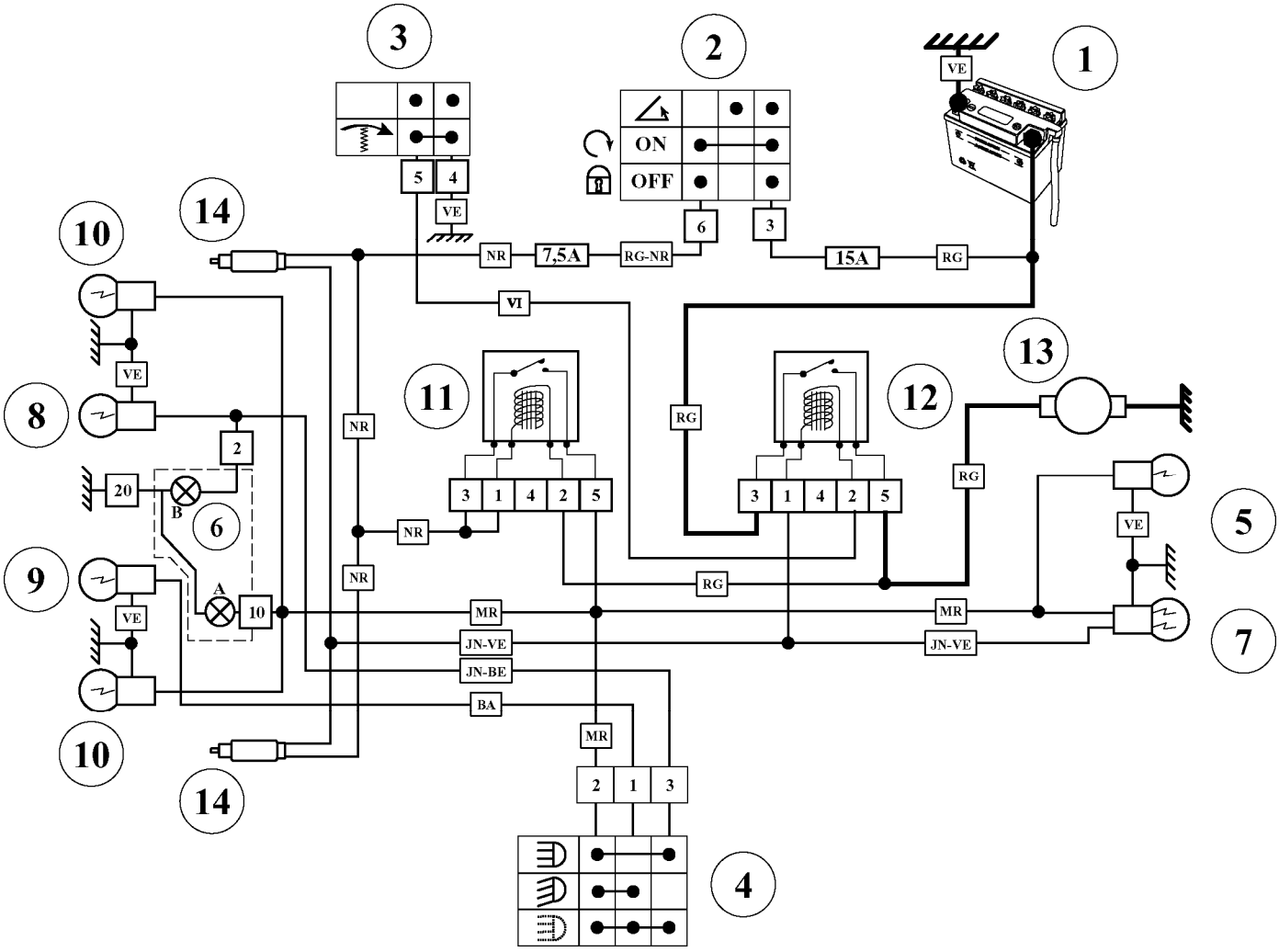


STORAGE COMPARTMENT TRIM PANELS **(18)**



ELECTRICITY

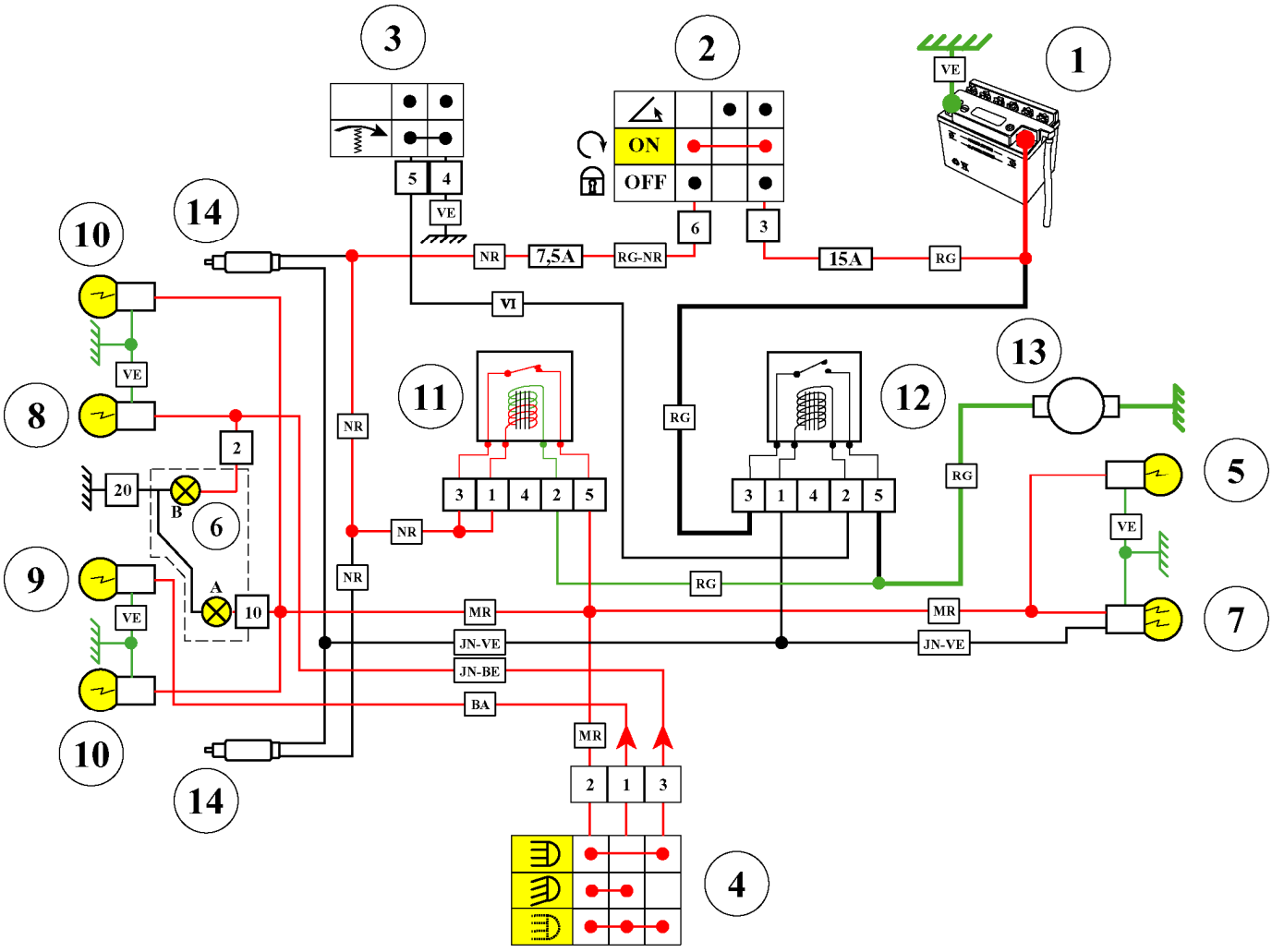
Functioning principle of the 50 cc starter and lighting circuits



1. Battery
2. Ignition switch
3. Starter button
4. Lighting control
5. Rear light
6. Instrument cluster
7. Brake light
8. High beam
9. Dip beam
10. Sidelight
11. Lighting relay
12. Starter motor relay
13. Starter motor
14. Brake light switch

BA	White
JN-BE	Yellow-Blue
JN-VE	Yellow-Green
MR	Brown
NR	Black
RG	Red
RG-NR	Red-Black
VE	Green
VI	Mauve

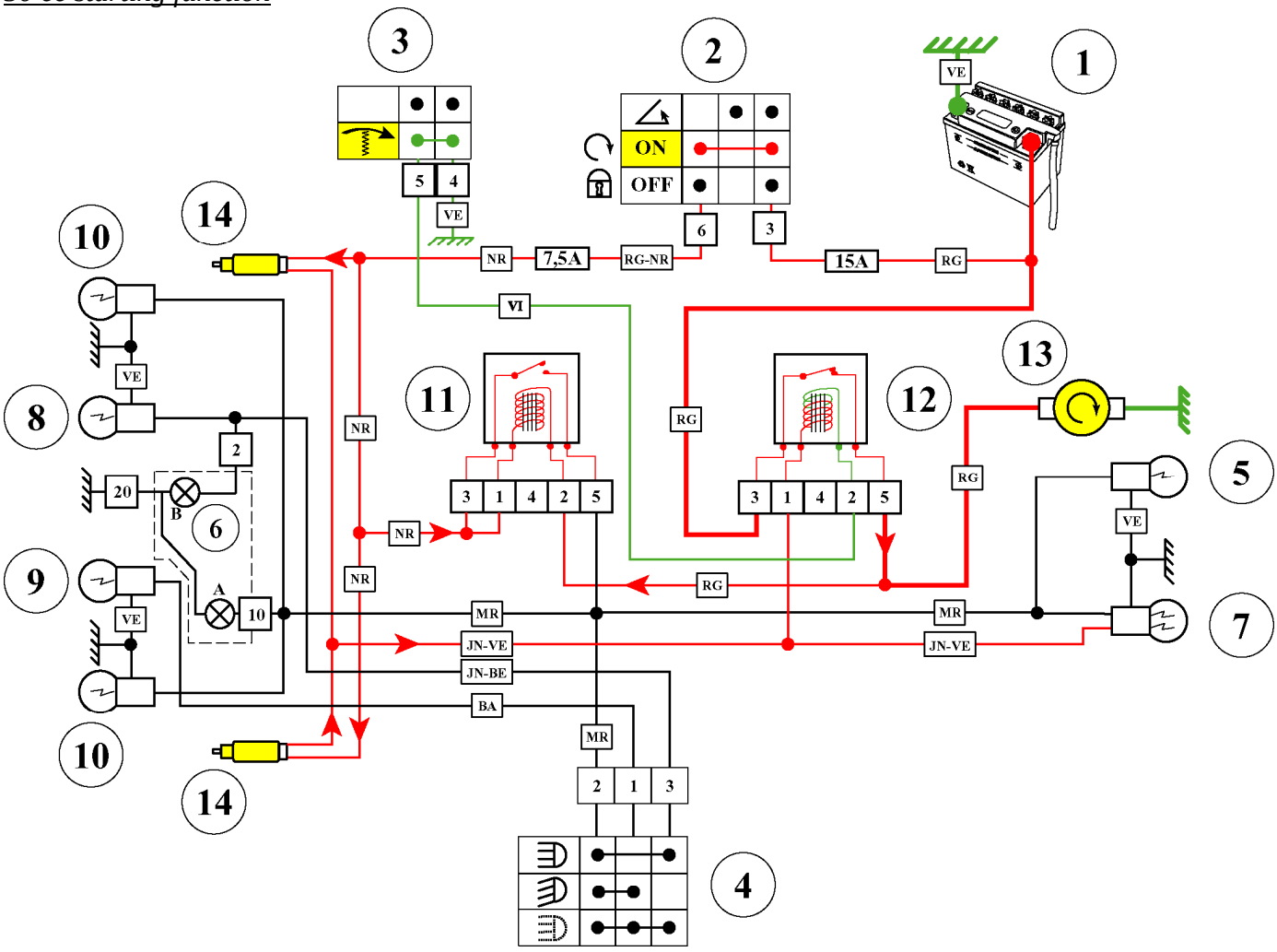
50 cc ignition on or engine running



The lighting relay (11) is powered when the ignition is on via terminals 1 and 3
Over terminal 2 of the relay, the control coil is earthed through the starter motor (13)
The power circuit, via relay terminal 5 powers:

- The rear and front sidelights
- The number plate light (50cc IL and 125cc)
- The instrument cluster lighting
- Power supply to the Dip/Full Beam control (4) and the headlight flasher for the 125 cc

50 cc starting function



Press starter button (3):

Pressing the starter button (3) earths the starter relay winding (12) which then powers:

- The starter motor
- Terminal 2 of the lighting relay (11)

The potential on the coil two terminals is the same (12 V):

- the magnetic field disappears
- the relay blade opens
- the lighting circuit is no longer powered

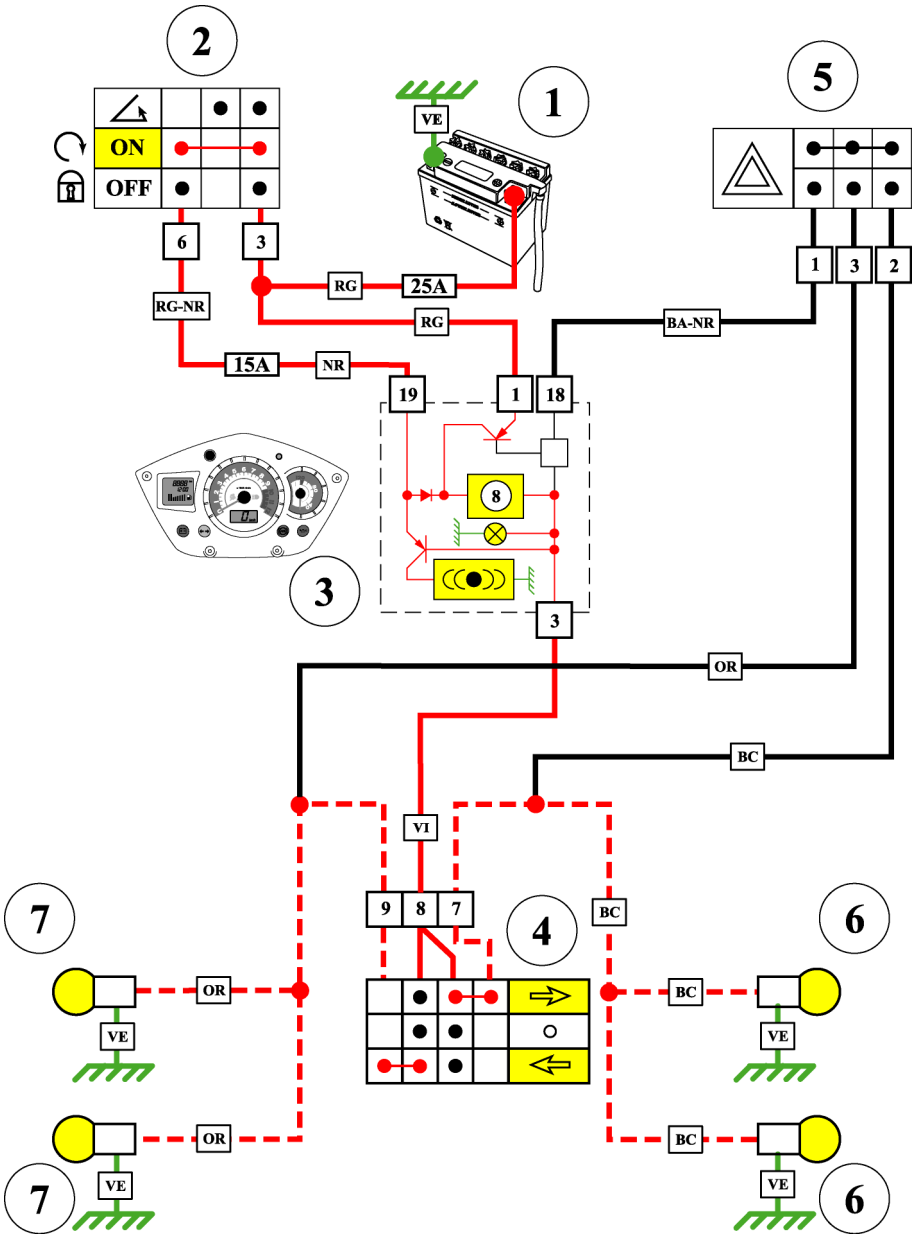
Note: All of the battery power will be used by the starter motor

Without pressing the starter button (3):

The magnetic field in the starter relay coil (12) disappears the power circuit opens:

- Terminal 2 on the lighting relay is earthed through the starter motor
- The lighting circuit is powered

Direction indicator functioning principle (125 cc)

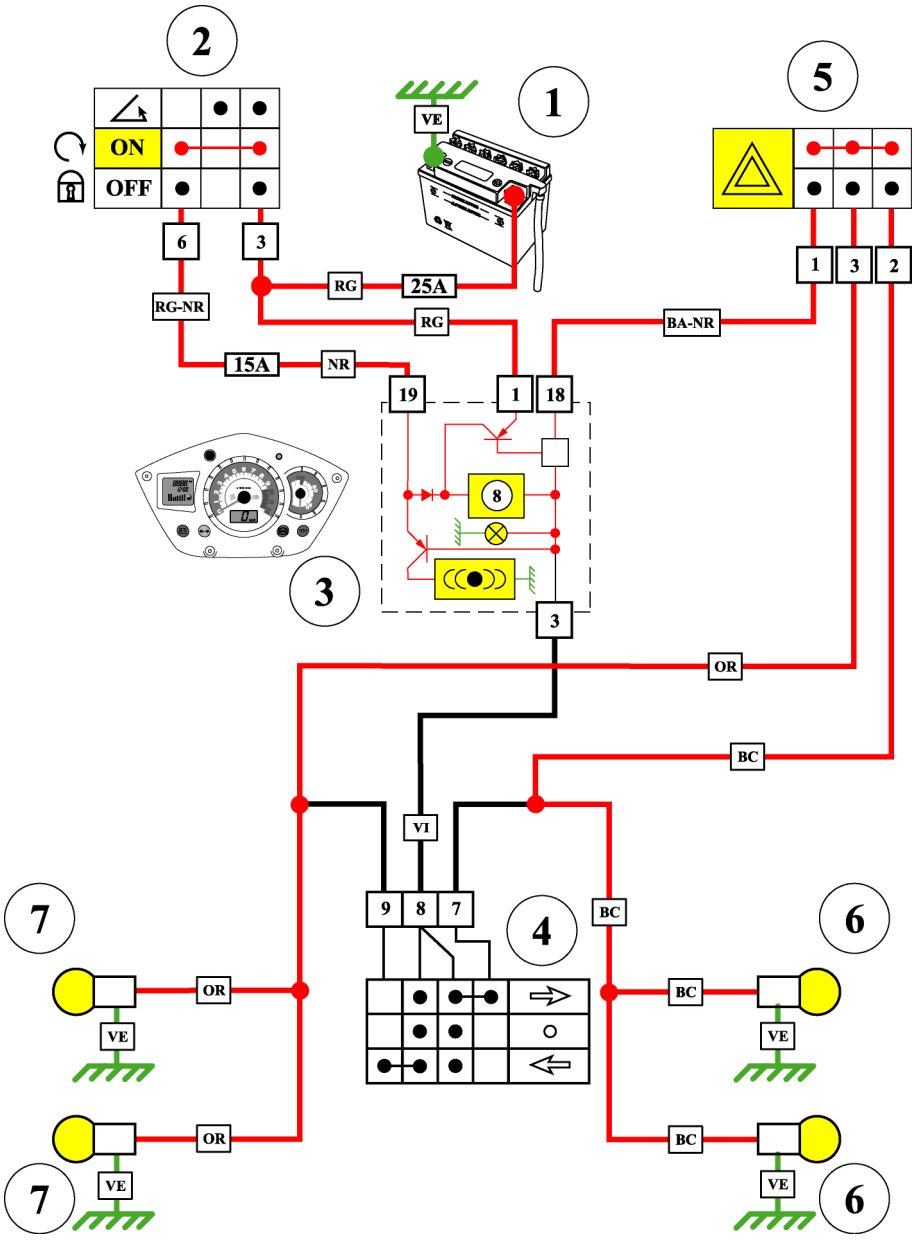


Direction indicator function

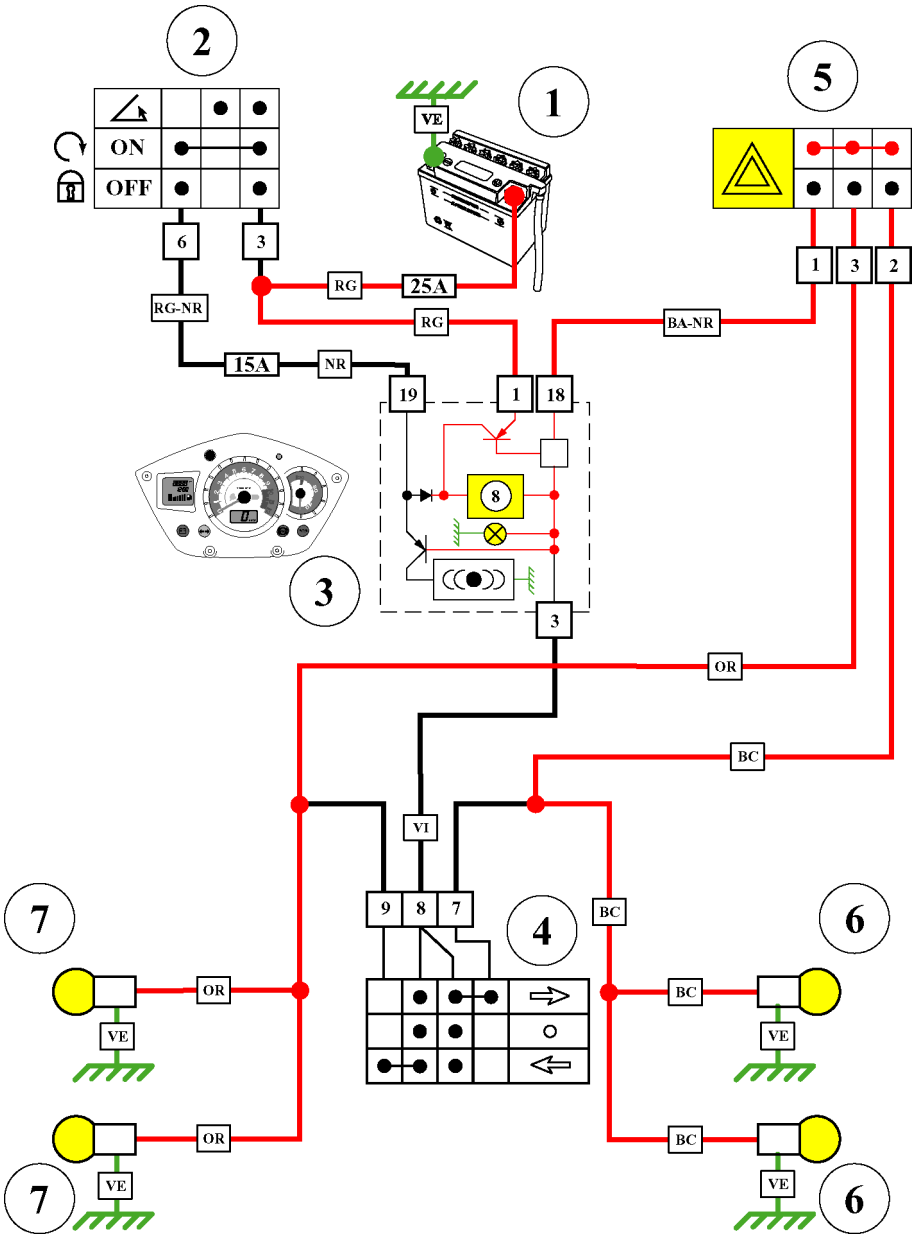
1. Battery
2. Ignition switch
3. Instrument cluster
4. Direction indicator switch
5. Hazard warning lights switch
6. Right direction indicator
7. Left direction indicator
8. Direction indicator unit

BA-NR	White-Black
BC	Light blue
JN-BE	Yellow-Blue
OR	Orange
RG	Red
RG-NR	Red-Black
VE	Green
VI	Mauve

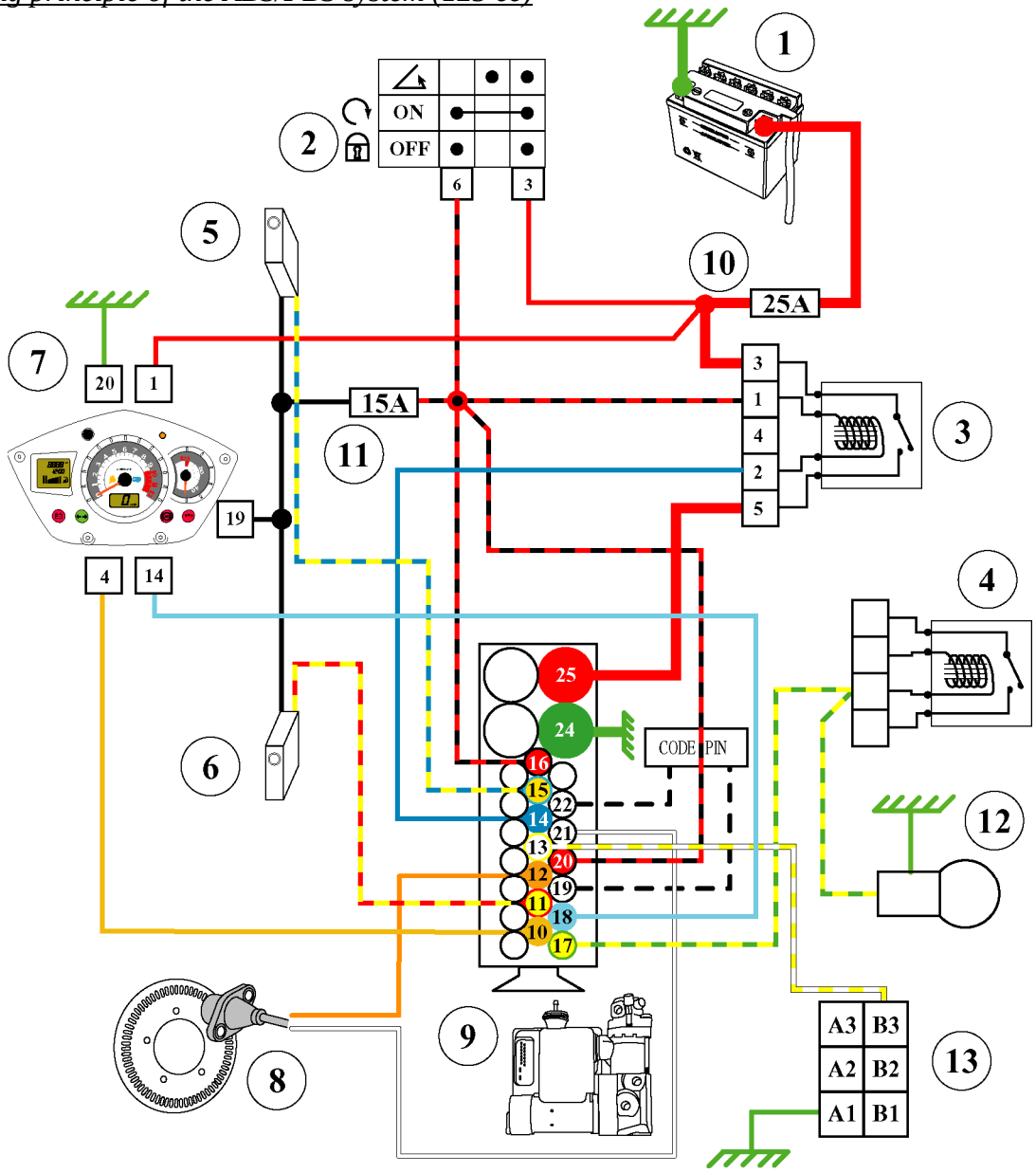
Hazard warning lights with ignition on (125 cc)



Hazard warning lights without ignition on (125 cc)

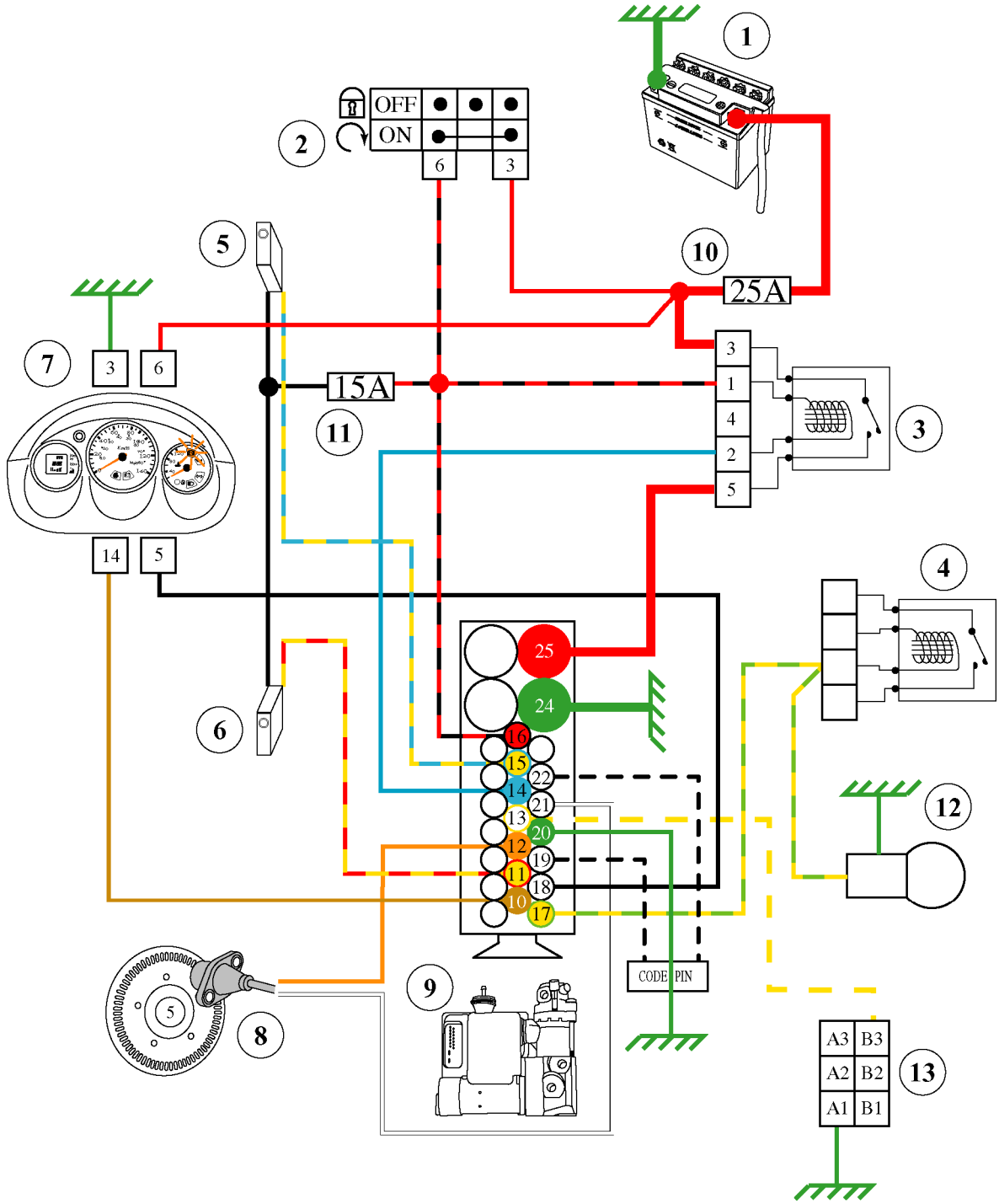


Functioning principle of the ABS/PBS system (125 cc)



1. Battery
2. Ignition switch
3. Module main relay
4. Starter motor relay
5. RH brake contactor
6. LH brake contactor
7. Instrument cluster
8. Machine speed sensor
9. Control unit
10. 25A fuse
11. 15A fuse
12. Brake light
13. Diagnostic plug

ABS/PBS ELYSTAR 125cc



TRANSPONDER IMMOBILISER

Precautions:
Check that the diagnostic plug jumper is fitted. The jumper provides the link between the immobiliser module and the injection/ignition ECU, and is essential to be able to start the engine
If the jumper is not fitted, the transponder LED diagnostic is always the same (no link between the immobiliser and the ECU)
Note: Fitting of a 5 kΩ resistive suppressor along with a resistive spark plug is essential for the proper functioning of the engine

System programming
The machine is supplied with a red key (master) and a black key
The system is programmed in the factory
It is possible to program up to 7 black keys
The key memory procedure is the same as the AEC400 and ACI100 system

Reminder of the key memory procedure
1. Using the red key, set the ignition to on, and when the LED lights, turn off the ignition
2. Within a maximum of 15 seconds of cutting off the ignition with the red key, turn on the ignition with the black key, and when the LED comes on turn off the ignition (repeat the operation for each black key to be memorised (maximum of 7 black keys))
3. Within a maximum of 15 seconds of turning off the ignition with the last key memorised, turn on the ignition with the red key, and when the LED comes on, turn off the ignition

Key memory check
Using the red key, turn on the ignition, the LED on the instrument panel comes on for 0.5 seconds and flashes a number of times. The number of flashes indicates the number of keys memorised, including the red key

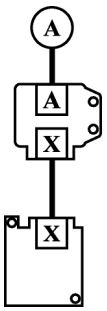
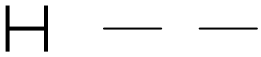
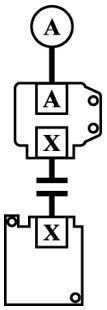
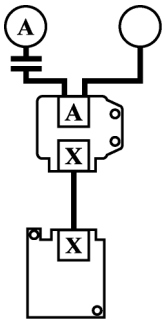
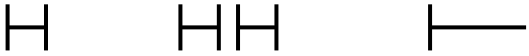
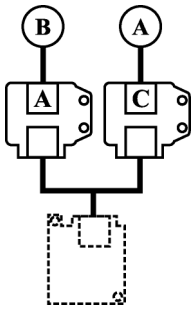
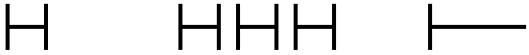
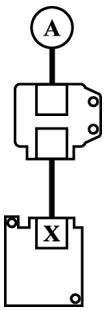
Additional information
Before carrying out any work on the transponder immobiliser, have the machine red key and black key to hand

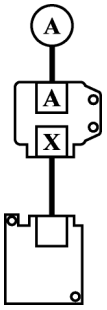
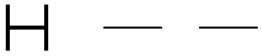
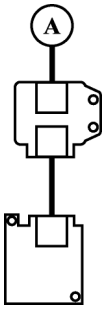
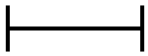
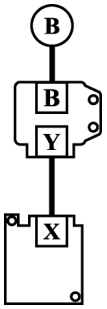
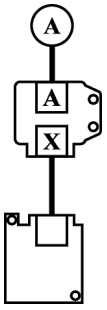
If the engine will not start, a first diagnostic may be carried out using the LED before checking the other parts of the ignition system

Note: Do not remove the diagnostic plug jumper
In case of a fault, do not use an immobiliser module or ECU from another machine to carry out tests. The keys, immobiliser module and ECU programmed on another machine form an assembly, are linked by a code and must under no circumstances be separated

Important : If an ECU is changed without memorising the keys, do not turn on the ignition more than 16 times if the diagnostic jumper is disconnected as beyond this number, the ECU immobiliser function is erased.

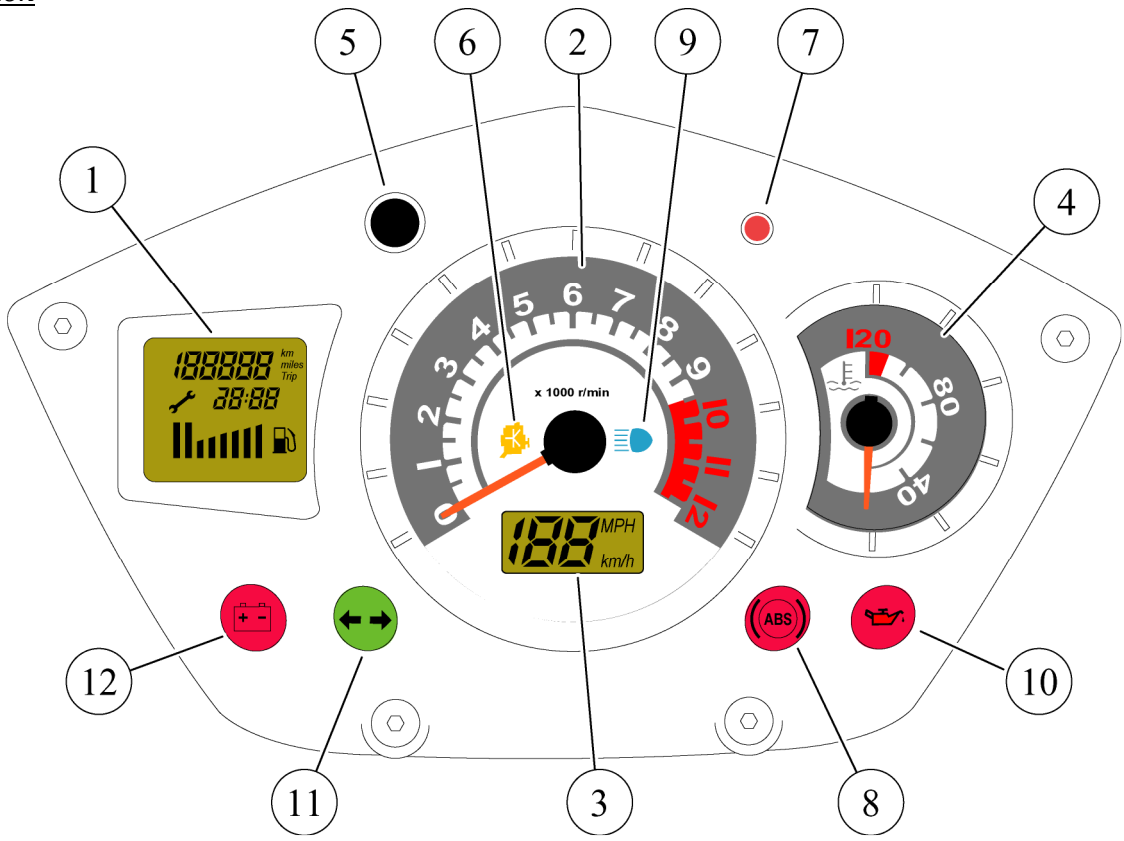
Synoptics

	Assembly correct	
	Cut between the immobiliser module and the ECU	
	Cut between the antenna and the immobiliser unit or no transponder in they key	
	Wrong key or immobiliser module from another machine	
	Blank immobiliser module	

	Blank ECU (starting possible with red key)	
	Immobiliser module and ECU blank	
	Programmed immobiliser module and key from another machine	
	Blank ECU, with 16 memorised switch on without diagnostic plug loop	

INSTRUMENT CLUSTER

Description

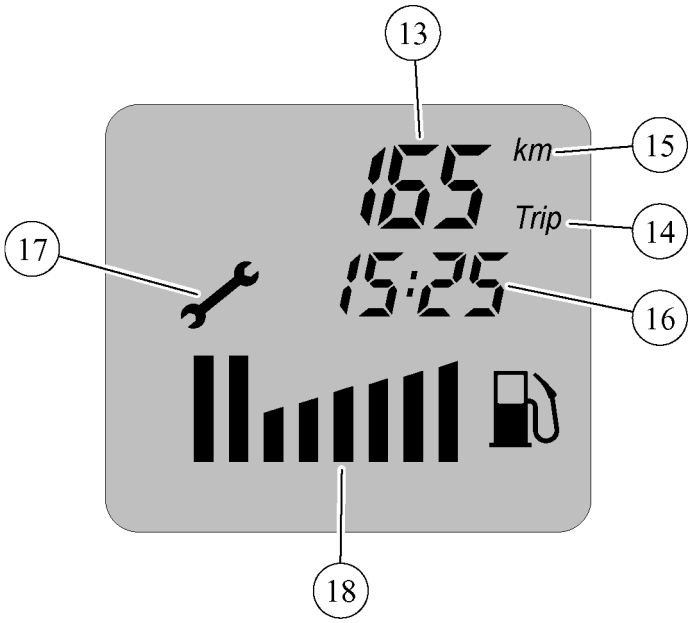


1. Multi-function display
2. Rev counter
3. Speedometer
4. Engine temperature gauge
5. Control button
6. Injection system diagnostic warning light
7. Transponder immobiliser dissuasion light
8. ABS/PBS system diagnostic light
9. Headlight warning light
10. Oil low level warning light
11. Direction indicator warning light
12. Battery charge warning light

Instrument cluster self-diagnostic when ignition is turned on

Different functioning tests are carried out automatically for 5 seconds :
- Display of all of the multi-function display items (1) and the speed (3)
- Lighting of all the warning lights (except ABS/PBS depending on version)
- Test of rev counter stepper motors (2) and engine temperature (4) giving one sweep of the needles and zero reset where necessary

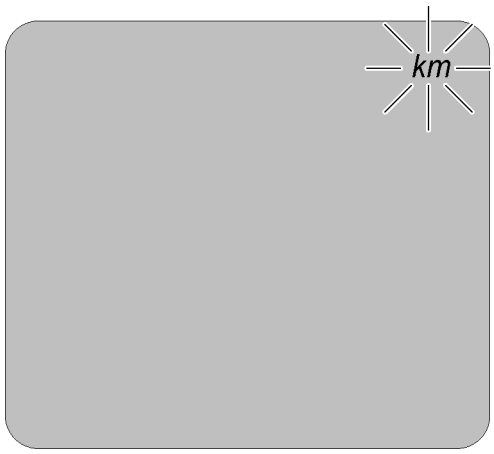
Description of the multi-function display

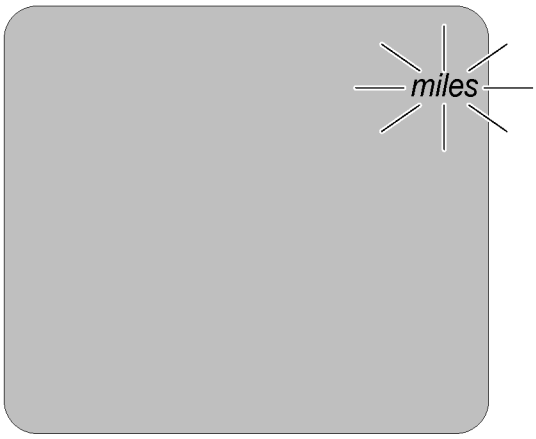


13. Odomètre (totaliseur ou journalier)
14. Indication de l'affichage de l'odomètre journalier
15. Indication de l'unité utilisée par l'odomètre
16. Horloge
17. Indicateur de maintenance (symbole "clé")
18. Jauge à carburant

MULTI-FUNCTION DISPLAY FUNCTIONS AND SETTINGS

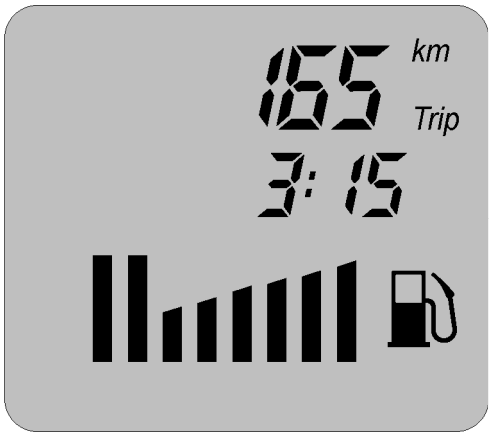
Changing the distance unit





- Ignition off
-Press button and hold down
-Turn on the ignition
-Release the button
-Press for <3s to select Km/Miles
-Turn off ignition to confirm

Tripmeter Total/Daily display



- Turn on the ignition
-Press and release the button to select the function required

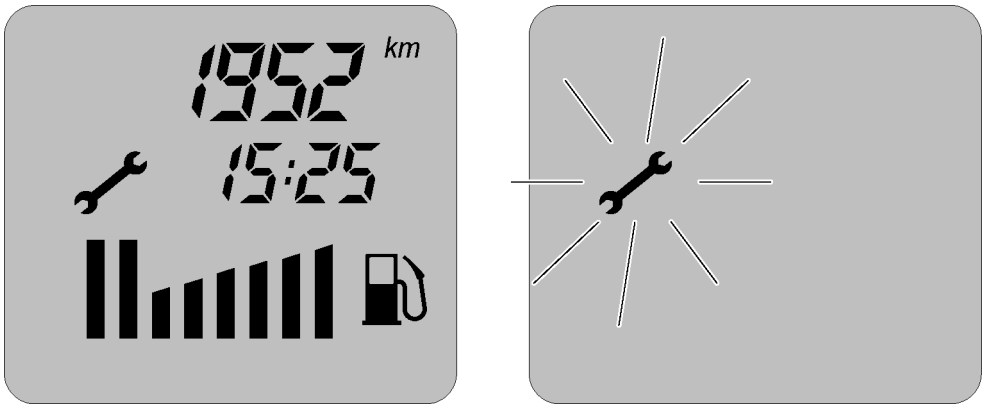
Daily Km reset
-Hold down the button for >5s

Time setting

The time can only be set in the tripmeter total position
- Ignition on, press the button (5) until the time flashes
- Set the time by successive pushes on the control button
- Press the control button to confirm the hour, the minutes figure flashes
- Proceed in the same way to set the minutes
- Press the control button for more than 3 seconds to confirm the time

Maintenance reset

Every 5000 km a « spanner » symbol appears informing the rider that his machine is due for service
After servicing the machine, erase the symbol as follows:



- Ignition off
- Press button and hold down
-Turn on the ignition (only the spanner appears and flashes)
- Press for >5s to erase the symbol

Fuel gauge self-diagnostic

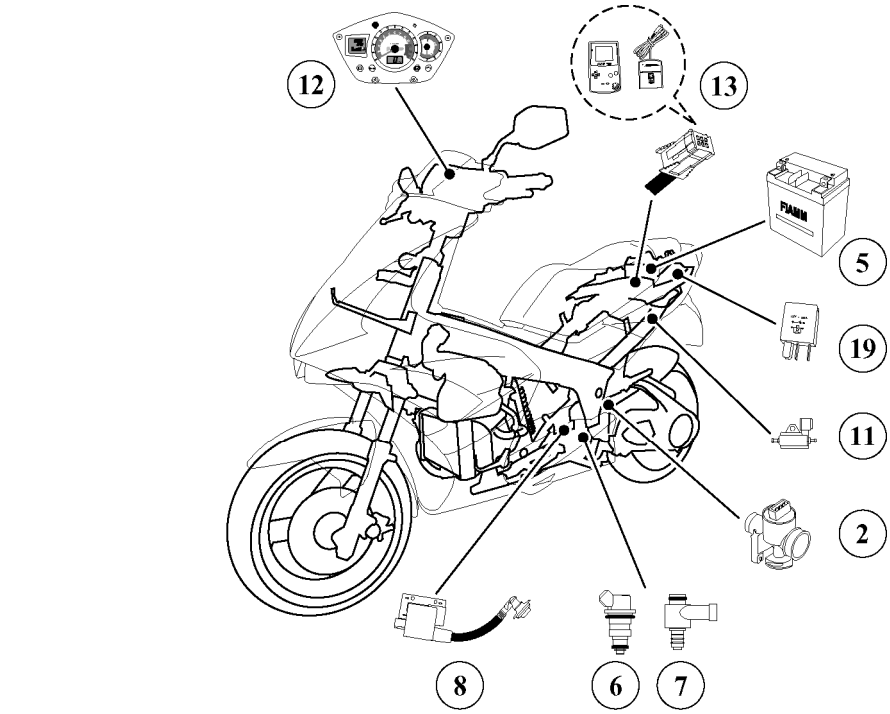
If the fuel system is cut off from the fuel gauge, when the ignition is turned on, the 8 LEDs light one after the other

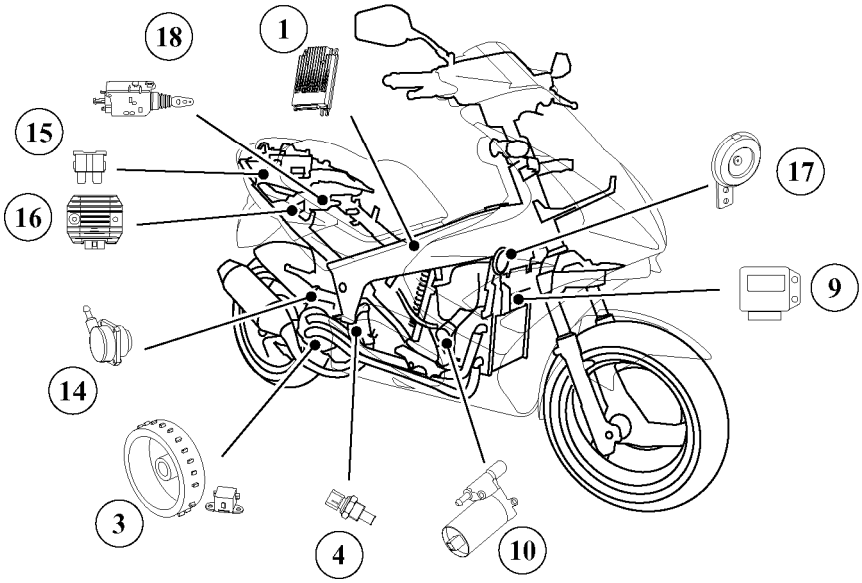
Gauge functioning (8s timer)

8 LEDs represent a full tank (10 ohms)
2 LEDs flash (75 ohms)
1 LED flashes (98 ohms)
8 LEDs flash (R> 87 ohms) means an empty tank

LOCATION OF COMPONENTS

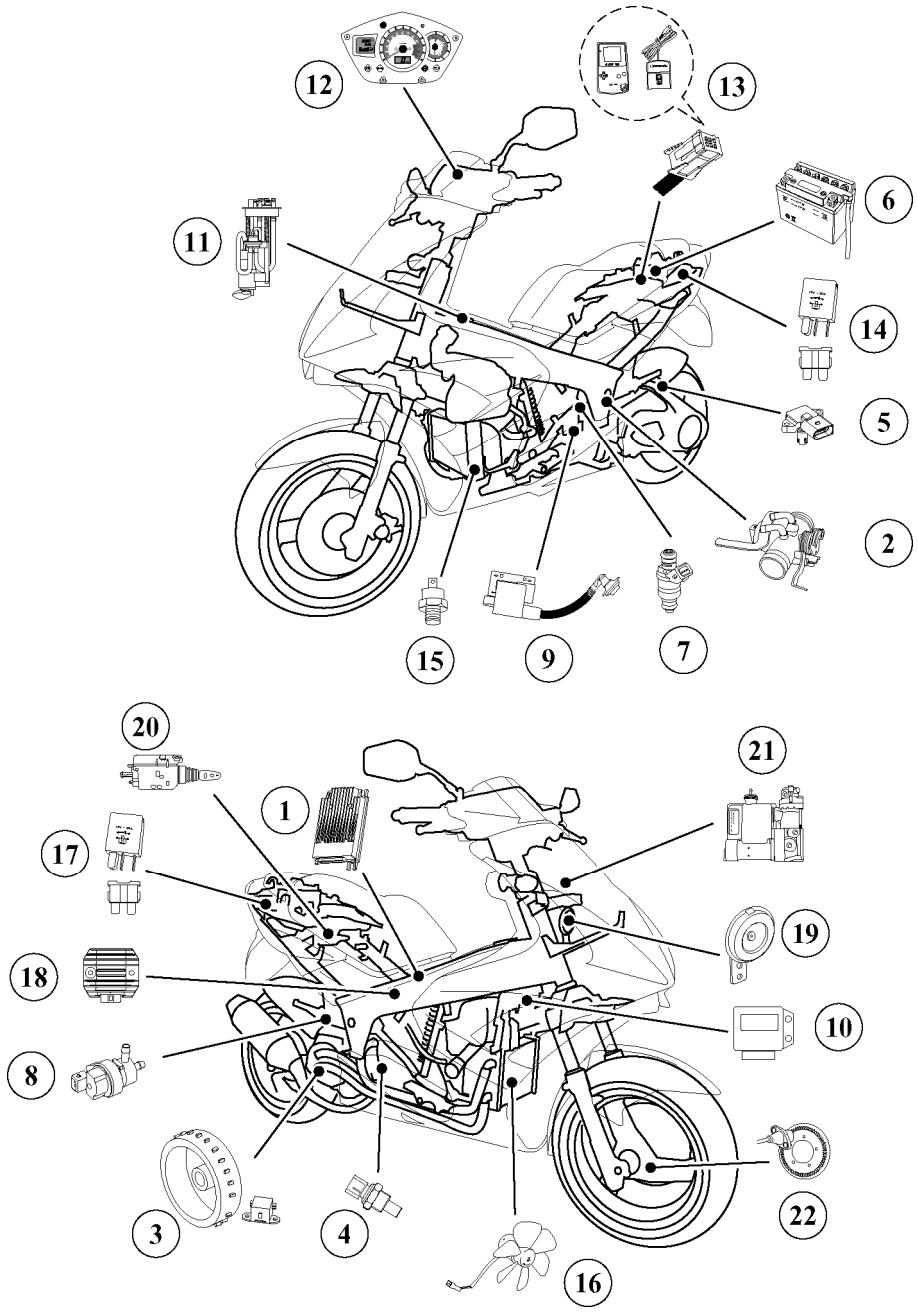
50 cc





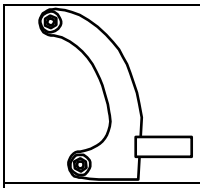
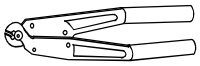
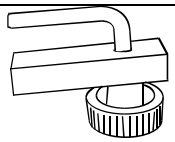
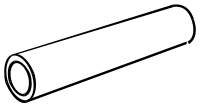
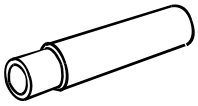
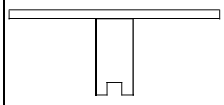
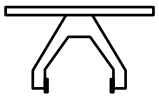
1. Injection ECU
2. Throttle unit
3. Engine position and speed sensor
4. Temperature sensor
5. Battery
6. Fuel injector
7. Air injector
8. Ignition coil
9. Immobiliser module
10. Fuel pump
11. Oil pump
12. Diagnostic light
13. Diagnostic plug
14. Air compressor
15. Fuses
16. Voltage regulator
17. Horn
18. Saddle lock
19. Starter / lighting relay

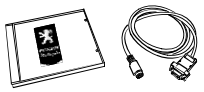
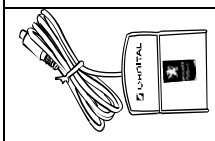
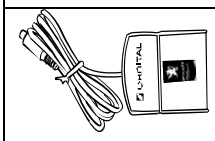
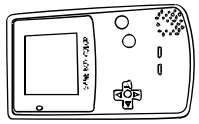
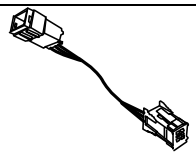
125 cc

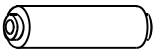
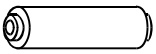
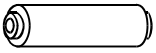


1. Injection ECU
2. Throttle unit
3. Engine position and speed sensor
4. Temperature sensor
5. Air pressure and air temperature sensor
6. Battery
7. Fuel injector
8. Idle control valve
9. Ignition coil
10. Immobiliser module
11. Fuel pump
12. Diagnostic light
13. Diagnostic plug
14. Fuel pump relay/ABS relay/light relay/Fuse 25A
15. Heat switch
16. Motor-driven fan
17. Fuse 15A/starter relay
18. Voltage regulator
19. Horn
20. Saddle lock
21. ABS/PBS module
22. Machine speed sensor

SPECIAL TOOLING

.	Tool N°	Description	Used with
	756717	Engine mount adapter 125 cc	
	750539	Tie-wrap pliers	
	755996	Pipe clamp	
	755986	air injector setting tool 50 cc	
	755989	air injector drift 50 cc	
	replaces 756076	Tank gauge spanner	
	756716 replaces 755056	Tank ring spanner	

.	Tool N°	Description	Used with
	755990	Diagnostic tool update software	Computer 755878 755806 755807
	755806	Cartridge Europe	755878
	755807	Cartridge Export	755878
	755878	Diagnostic tool (game boy color)	755806
	756714 replaces 755878	Diagnostic tool (game boy advance)	755806 755807
	756017	50 cc fuel injector power supply harness	
	756449	ABS/PBS interface cable for diagnostic tool 125 cc	

.	Tool N°	Description	Used with
	756607	Fork seal fitting tool 125 cc	
	756608	Fork seal fitting tool 50 cc	
	756668	Crank assembly lip seal tool 50 cc	