

Product: 1993-2002 Aprilia RS125 Motorcycle Service Repair Workshop Manual  
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**FOREWORD**

Product: 1993-2002 Aprilia RS125 Motorcycle Service Repair Workshop Manual

**RS 125**

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## 0.1. FOREWORD

### 0.1.1. FOREWORD

- This manual provides the information required for normal servicing.
- This manual is intended for use by **aprilia** Dealers and their qualified mechanics. Certain information has been omitted intentionally, as this manual does not purport to provide a comprehensive treatise on mechanics. The persons who will use this manual must be fully conversant with the basics of mechanics and with the basic procedures of motorcycle repair. Repairing or inspecting a motorcycle when one does not possess such basic knowledge or training could result in improper servicing and make the motorcycle unsafe to ride. For the same reason, certain basic precautions have been omitted in the descriptions of repair and inspection procedures. Take special care to avoid damage to motorcycle components or injury to persons. **aprilia s.p.a.**'s mission is to constantly enhance the riding pleasure of final users through the on-going improvement of its products as well as of the relevant technical literature. All **aprilia** Points of Sale and Subsidiaries worldwide are kept updated on major engineering changes and modifications to repair procedures. Such changes and modifications are then reflected in the next release of the relevant manual. When in doubt about an inspection or repair procedure, please contact the **aprilia** CONSUMER SERVICE (A.C.S.) DEPARTMENT, who will be glad to provide full information on the procedure in question as well as on any updates or engineering changes affecting the motorcycle under consideration.

**aprilia s.p.a.** reserves the right to make changes to its products at any time, barring any such changes as may alter the essential features of a product as specified in the relevant manual.

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For more detailed information, please read  [0.1.2.](#)

Original release: november 2002

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0.1.2. REFERENCE MANUALS

ENGINE WORKSHOP MANUALS

aprilia part# (description)	
8140133 (926)	I F E
8140134 (943)	D UK

PARTS CATALOGUES

aprilia part# (description)	
340X .....	I
993.....	I

SPECIAL TOOLS CATALOGUES

aprilia part# (description)	
8202278	I F D E UK

OWNER'S MANUALS

aprilia part# (description)	
Model years 1993	
8102260	I
Model years 1994	
8102260	I
8102319	D F UK
Model years 1995	
8102476	I
8102530	D UK F
8102543	E
Model years 1996	
8102685	I
8102682	D UK F
8102530	D UK F
8102683	P E NL
8102543	E
Model years 1997	
8102685	I
8102682	D UK F
8102683	P E NL
8102530	D UK F
8102543	E
8102752	DK SF GR
8102753	DK NL P
Model years 1998	
8102685	I
8102682	D UK F
8102683	P E NL
8102849	DK
8102934	D UK F AUS
Model years 1999	
8102821	I F D
8102937	P E UK AUS
8102938	DK NL SF
8102939	GR J UK
Model years 2001	
8202248	USA
8102821	I F D
8102937	P E UK AUS
8102938	DK NL SF
8102939	GR J UK
Model years 2002	
8104465	I F D
8104466	P E UK
8104467	DK NL SF
8104468	GR J UK

## 0.1.3. ABBREVIATIONS/SYMBOLS/CONVENTIONS

#	= number
<	= is less than
>	= is more than
≤	= is less than or equal to
≥	= is more than or equal to
~	= approximately
∞	= infinite
°C	= degrees Celsius (centigrade)
°F	= degrees Fahrenheit
±	= plus or minus
a.c	= alternated current
A	=ampere
Ah	=ampere per hour
API	= American Petroleum Institute
HT	= High Tension
AV/DC	= Anti-Vibration Double Countershaft
bar	= pressure measurement (1 bar =100 kPa)
DC	= Direct Current
cu cm	= cubic centimetres
CO	= carbon oxide
CPU	= Central Processing Unit
DIN	= German industrial standards (Deutsche Industrie Norm)
DOHC	= Double Overhead Camshaft
ECU	= Electronic Control Unit
rpm	= revolutions per minute
HC	= unburnt hydrocarbons
ISC	= Idle Speed Control
ISO	= International Standardization Organization
kg	= kilograms
kgm	= kilograms per metre (1 kgm =10 Nm)
km	= kilometres
km/h	= kilometres per hour
kΩ	= kiloOhm
kPa	= kiloPascal (1 kPa =0.01 bar)
KS	= clutch side (from the German "Kupplungseite")
kW	= kiloWatt
/	=litres
LAP	= racetrack lap
LED	= Light Emitting Diode
LEFT	
SIDE	=left side
m/s	= metres per second
max	= maximum
mbar	= millibar (1 mbar =0.1 kPa)
mi	= miles
MIN	= minimum
MPH	= miles per hour
MS	= flywheel side (from the German "Magnetoseite")
MΩ	= megaOhm
N.A.	= Not Available
N.O.M.M.	= Motor Octane Number
N.O.R.M.	= Research Octane Number
Nm	= Newton per metre (1 Nm =0.1 kgm)
Ω	=ohm
PICK-UP	
BDC	= Bottom Dead Centre
TDC	= Top Dead Centre
PPC	= Pneumatic Power Clutch
RIGHT	
SIDE	= right side
SAE	= Society of Automotive Engineers
T.B.E.I.	= crowned-head Allen screw
T.C.E.I.	= cheese-headed Allen screw

<b>T.E.</b>	=hexagonal head
<b>TEST</b>	= diagnostic check
<b>T.P.</b>	=flat head screw
<b>TSI</b>	= Twin Spark Ignition
<b>UPSIDE- DOWN</b>	= inverted fork
<b>V</b>	=volt
<b>W</b>	=watt
<b>Ø</b>	= Diameter

GENERAL INFORMATION

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## 1.1. MANUAL LAYOUT

### 1.1.1. CONVENTIONS USED IN THE MANUAL

- This manual is divided in sections and subsections, each covering a set of the most significant components. For quick reference, see the sections index.
- Unless expressly specified otherwise, assemblies are reassembled by reversing the dismantling procedure.
- The terms “left” and “right” are referred to the motorcycle when viewed from the riding position.
- Motorcycle operation and basic maintenance are covered in the “OWNER’S MANUAL”.

In this manual any variants are identified with these symbols:

frame # ZD4DW.....(starting from Model Year 2001)

**OPT** option

**✳** Catalysed version

- All versions

11Kw 11 Kw derated version

80Km 80Km/h speed

f.p Full-power version

MP National homologation

SF European homologations (EURO 1 limits)

#### VERSION:

<b>I</b> Italy	<b>GR</b> Greece	<b>Mal</b> Malaysia
<b>UK</b> United Kingdom	<b>NL</b> Netherlands	<b>RCH</b> Chile
<b>A</b> Austria	<b>CH</b> Switzerland	<b>HR</b> Croatia
<b>P</b> Portugal	<b>DK</b> Denmark	<b>AUS</b> Australia
<b>SF</b> Finland	<b>J</b> Japan	<b>USA</b> United States of America
<b>B</b> Belgium	<b>SGP</b> Singapore	<b>BR</b> Brazil
<b>D</b> Germany	<b>SLO</b> Slovenia	<b>RSA</b> Republic of South Africa
<b>F</b> France	<b>IL</b> Israel	<b>NZ</b> New Zealand
<b>E</b> Spain	<b>ROK</b> South Korea	<b>CDN</b> Canada

**1.1.2. SAFETY INFORMATION**

The following conventions are used to identify safety information throughout the manual:



**This symbol identifies safety-related information. Whenever you see this symbol in the manual or attached to the motorcycle, use utmost care to avoid the risk of injury. Disregarding the instructions identified by this symbol may put your safety, as well as that of other persons or of the motorcycle at risk!**



**DANGER**  
Disregarding these indications may lead to severe injury or death



**WARNING**  
Disregarding these indications may lead to minor injury or motorcycle damage.

**NOTE** *The term "NOTE" in this manual precedes important information or instructions.*

## 1.2. GENERAL RULES

### 1.2.1. BASIC SAFETY RULES

#### CARBON MONOXIDE

Should it be necessary to perform some operations with the vehicle running, make sure to work outdoors or in a well-aerated room.

Avoid starting the engine in closed or badly-ventilated rooms.

In case you are working indoors, make use of an exhaust gases scavenging system.



#### DANGER

Exhaust gases contain carbon monoxide, which is extremely toxic if inhaled and may cause loss of consciousness or even lead to death by asphyxia.

#### FUEL



#### DANGER

The fuel used to operate engines is highly flammable and becomes explosive under particular conditions. Refuelling and engine service should take place in a well-ventilated area with the engine stopped. Do not smoke when refuelling or in the proximity of sources of fuel vapours, avoid flames, sparks and any element that could ignite fuel or provoke explosions.

**DO NOT DISPOSE OF FUEL IN THE ENVIRONMENT.**

**KEEP AWAY FROM CHILDREN.**

#### HIGH-TEMPERATURE COMPONENTS

The engine and the exhaust system parts become hot and continue to be hot even for some time after the engine has been stopped.

Before handling these parts, wear insulating gloves or wait for the engine and the exhaust system to cool completely down.

#### USED GEARBOX AND FORK OILS



#### DANGER

In case any maintenance operation should be required, it is advisable to use latex gloves.

Gear oil may cause serious damage to the skin if handled daily and for long periods.

Wash your hands carefully after use.

Put it in a sealed container and take it to the filling station where you usually buy it or to an oil salvage center.

In case any maintenance operation should be required, it is advisable to use latex gloves.

**DO NOT DISPOSE OF OIL IN THE ENVIRONMENT**

**KEEP AWAY FROM CHILDREN.**

#### BRAKE FLUID



#### WARNING

When using the brake fluid, take care not to spill it on the plastic, rubber or painted parts, since it can damage them.

When carrying out the maintenance operations on the braking system, use a clean cloth to cover these parts.

Always wear safety goggles when working on the braking system.

The brake fluid is highly irritant. Avoid contact with your eyes.

If the brake fluid gets in contact with the skin or the eyes, carefully wash the parts of your body that get in contact with the fluid and consult a doctor.

**KEEP AWAY FROM CHILDREN.**

#### COOLANT

The coolant is composed of ethylene glycol that, under certain conditions, can become inflammable and send out invisible flames causing severe burns.

**DANGER**

Be careful not to spill the coolant on the red-hot parts of the engine and the exhaust system: it may catch fire and send out invisible flames.

In case any maintenance operation should be required, it is advisable to use latex gloves.

Even if toxic, coolant has a sweet flavour. Never leave it inside open containers or within the reach of animals to prevent the risk of drinking.

**KEEP AWAY FROM CHILDREN.**

Do not remove the radiator plug when the engine is hot. The coolant is under pressure and could cause severe burns.

**HYDROGEN GAS AND BATTERY ELECTROLYTE****DANGER**

The battery electrolyte is a toxic, caustic substance containing sulphuric acid and thus able to cause severe burns in case of contact.

Always wear tight gloves and protective clothes when handling this fluid.

If the electrolyte gets in contact with the skin, carefully wash the parts of your body that get in contact with the fluid with abundant fresh water.

Always use a protection for your eyes since also a very small amount of the battery fluid can cause blindness. In the event of contact with your eyes, carefully wash them with water for fifteen minutes and then consult immediately an eye specialist.

Should you accidentally drink some fluid, drink abundant water or milk, then drink magnesia milk or vegetable oil and consult immediately a doctor. Battery releases explosive gases. Keep flames, sparks, cigarettes and any other heat source away from the battery. Make sure the room is well-aerated when servicing or recharging the battery.

**KEEP AWAY FROM CHILDREN.**

The battery fluid is corrosive

Do not pour it on the plastic parts.

Make sure that the electrolyte acid is suitable for the type of battery used.

**GENERAL PRECAUTIONS AND INFORMATION**

Follow these instructions closely when repairing, disassembling or reassembling the motorcycle or its components.

**DANGER**

Using bare flames is strictly forbidden when working on the motorcycle. Before servicing or inspecting the motorcycle: stop the engine and remove the key from the ignition switch; allow for the engine and exhaust system to cool down; where possible, lift the motorcycle using adequate equipment placed on firm and level ground. Be careful of any parts of the engine or exhaust system which may still be hot to the touch to avoid scalds or burns.

Never put any mechanical parts or other vehicle components in your mouth when you have both hands busy. None of the motorcycle components is edible. Some components are harmful to the human body or toxic.

Unless expressly specified otherwise, motorcycle assemblies are refitted or re-assembled by reversing the removal or dismantling procedure. Where a procedure is cross-referred to relevant sections in the manual, proceed sensibly to avoid disturbing any parts unless strictly necessary. Never attempt to polish matte-finished surfaces with lapping compounds.

Never use fuel instead of solvent to clean the motorcycle.

Do not clean any rubber or plastic parts or the seat with alcohol, petrol or solvents. Clean with water and neutral detergent.

Always disconnect the battery negative (-) lead before soldering any electrical components.

When two or more persons service the same motorcycle together, special care must be taken to avoid personal injury.

Read  1.3.1.

**BEFORE DISASSEMBLING ANY COMPONENTS**

- Clean off all dirt, mud, and dust and clear any foreign objects from the vehicle before disassembling any components.
- Use the model-specific special tools where specified.

### DISASSEMBLING THE COMPONENTS

- Never use pliers or similar tools to slacken and/or tighten nuts and bolts. Always use a suitable spanner.
- Mark all connections (hoses, wiring, etc.) with their positions before disconnecting them. Identify each connection using a distinctive symbol or convention.
- Mark each part clearly to avoid confusion when refitting.
- Thoroughly clean and wash any components you have removed using a detergent with low flash point.
- Mated parts should always be refitted together. These parts will have seated themselves against one another in service as a result of normal wear and tear and should never be mixed up with other similar parts on refitting.
- Certain components are matched-pair parts and should always be replaced as a set.
- Keep the motorcycle and its components well away from heat sources.

### REASSEMBLING THE COMPONENTS



#### DANGER

**Never reuse a circlip or snap ring. These parts must always be renewed once they have been disturbed. When fitting a new circlip or snap ring, take care to move the open ends apart just enough to allow fitment to the shaft.**

**Make a rule to check that a newly –fitted circlip or snap ring has located fully into its groove.**

**Never clean a bearing with compressed air.**

**NOTE** All bearings must rotate freely with no hardness or noise. Replace any bearings that do not meet these requirements.

- Use ORIGINAL **aprilia** SPARE PARTS only.
- Use the specified lubricants and consumables.
- Where possible, lubricate a part before assembly.
- When tightening nuts and bolts, start with the largest or innermost nut/bolt and observe a cross pattern. Tighten evenly in subsequent steps until achieving the specified torque.
- Replace any self-locking nuts, gaskets, seals, circlips or snap rings, O-rings, split pins, bolts and screws which have a damaged thread.
- Lubricate the bearings abundantly before assembly.
- Make a rule to check that all components you have fitted are correctly in place.
- After repairing the motorcycle and after each service inspection, perform the preliminary checks, and then operate the motorcycle in a private estate area or in a safe area away from traffic.
- Clean all joint surfaces, oil seal edges and gaskets before assembly. Apply a light coat of lithium grease along the edges of oil seals. Fit oil seals and bearings with the marking or serial number facing outwards (in view).

### ELECTRICAL CONNECTORS

To disconnect the electrical connector, follow the procedures below. Failure to comply with these procedures may lead to irreparable damages to the connector and the wiring as well. If present, press the special safety hooks.



#### WARNING

**Do not pull cables to disconnect the two connectors.**

- Grasp the two connectors and disconnect them by pulling them in the two opposite directions.
- In case of dirt, rust, moisture, etc., thoroughly clean the inside of the connectors with compressed air.
- Make sure that the cables are correctly fitted inside the connectors terminals.

**NOTE** The two connectors have just one correct positioning. Make sure to position them in the right direction.

- Then fit the two connectors. Make sure they are correctly coupled (a click will be heard).

### TIGHTENING TORQUE SETTINGS



#### DANGER

**Always remember that the tightening torque settings of all wheel, brake, wheel shaft and other suspension parts play a fundamental role to ensure vehicle safety. Make sure that these values are always within the specified limits.**

**Check fastening parts tightening torque settings at regular intervals. Upon reassembly, always use a torque wrench.**

**Failure to comply with these recommendations could lead to the loosening and detachment of one of these parts with a consequent locking of the wheel or other serious troubles affecting the vehicle maneuverability, and thus the risk of falls and serious injuries or death.**

### 1.3. DANGEROUS ELEMENTS

#### 1.3.1. WARNINGS CONCERNING FUEL, LUBRICANTS, COOLANT AND OTHER COMPONENT PARTS

##### FUEL

**DANGER**

The fuel used to operate engines is highly flammable and becomes explosive under particular conditions.

Refuelling and engine service should take place in a well-ventilated area with the engine stopped. Do not smoke when refuelling or in the proximity of sources of fuel vapours. Avoid contact with bare flames, sources of sparks or any other source which may ignite the fuel or lead to explosion.

Take care not to spill fuel out of the filler, or it may ignite when in contact with hot engine parts. In the event of accidental fuel spillage, make sure the affected area is fully dry before starting the engine. Fuel expands from heat and when left under direct sunlight.

Never fill the fuel tank up to the rim. Tighten the filler cap securely after each refuelling.

Avoid contact with skin. Do not inhale vapours. Do not swallow fuel. Do not transfer fuel between different containers using a hose.

**DO NOT RELEASE FUEL INTO THE ENVIRONMENT.**

**KEEP AWAY FROM CHILDREN.**

Use only premium grade unleaded petrol, min. O.N. 95 (N.O.R.M.) and 85 (N.O.M.M.).

##### LUBRICANTS

**DANGER**

A good lubrication ensures the vehicle safety.

Failure to keep the lubricants at the recommended level or the use of a non-suitable new and clean type of lubricant can lead to the engine or gearbox seizure, thus leading to serious accidents, personal injury or even death.

Gear oil may cause serious damage to the skin if handled daily and for long periods.

Wash your hands carefully after use.

Do not dispose of oil into the environment.

Take it to the filling station where you usually buy it or to an oil salvage center.

**WARNING**

When filling the vehicle with this oil, take care not to spill it out since it could damage the vehicle paintwork.

In case of contact with oil, the tyres surface will become very slippery, thus becoming a serious danger for your safety.

In case of leaks, do not use the vehicle. Check and trace the cause of leaks and proceed to repair.

##### FRONT FORK FLUID

**DANGER**

Front suspension response can be modified to a certain extent by changing damping settings and/or selecting a particular grade of oil. Standard oil grade is SAE 20 W. Different oil grades can be selected to obtain a particular suspension response. (Choose SAE 5W for a softer suspension, 20W for a stiffer suspension).

The two grades can also be mixed in varying solutions to obtain the desired response.

 F.A. or  FORK has special properties, which enable them to retain virtually the same viscosity regardless of temperature to give constant damping response.

(Recommended) front fork oil, see  [1.8.1.](#)

##### BRAKE FLUID

**NOTE** This vehicle is fitted with front and rear disc brakes. Each braking system is operated by an independent hydraulic circuit. The information provided below applies to both braking systems.

**DANGER**

Do not use the vehicle in case brakes are worn out or do not work properly! The brakes are the parts that most ensure your safety and for this reason they must always be perfectly working. Failure to comply with these recommendations will probably lead to a crash or an accident, with a consequent risk of personal injury or death.

A wet surface reduces brakes efficiency.

**DANGER**

In case of wet ground the braking distance will be doubled, since both brakes and tyres drives on the road surface are extremely reduced by the water present on the road surface.

Any water on brakes, after washing the vehicle or driving on a wet road surface or crossing puddles or gips, can wet brakes so as to greatly reduce their efficiency.

Failure to comply with these recommendations may lead to serious accidents, with a consequent risk of severe personal injuries or death.

Brakes are critical safety components. Do not ride the vehicle in case brakes are not working at their best.

Check for brakes proper operation before every trip.

Brake fluid is an irritant. Avoid contact with eyes or skin.

In the event of accidental contact, wash affected body parts thoroughly. In the event of accidental contact with eyes, contact an eye specialist or seek medical advice.

**DO NOT RELEASE BRAKE FLUID INTO THE ENVIRONMENT.KEEP AWAY FROM CHILDREN.**

When handling brake fluid, take care not to spill it onto plastic or paint-finished parts or they will damage.

Check brake fluid level after the first 1000 km (625 mi) and then every 4000 km (2485 mi). See  [2.12.1](#) and  [2.12.4](#); change brake fluid every year, see  [2.12.2](#).

(Recommended) brake fluid, see  [1.8.1](#).

**DANGER**

Do not use any brake fluids other than the specified type. Never mix different types of fluids to top up level, as this will damage the braking system.

Do not use brake fluid from containers which have been kept open or in storage for long periods.

Any sudden changes in play or hardness in the brake levers are warning signs of problems with the hydraulic circuits.

Ensure that the brake discs and brake linings have not become contaminated with oil or grease. This is particularly important after servicing or inspections.

Make sure the brake lines are not twisted or worn.

Prevent accidental ingress of water or dust into the circuit.

Wear latex gloves when servicing the hydraulic circuit.

**DISC BRAKES****DANGER**

The brakes are the parts that most ensure your safety and for this reason they must always be perfectly working; check them before every trip.

A dirty disc soils the pads.

Dirty pads must be replaced, while dirty discs must be cleaned with a high-quality degreaser.

Perform the maintenance operations with half the indicated frequency if the vehicle is used in rainy or dusty areas, on uneven surfaces or on racetracks, see  [2.1.2](#). Check brake pads for wear, see  [2.12.3](#).When the disc pads wear out, the level of the fluid decreases to automatically compensate for their wear. The front brake fluid reservoir is located on the right handlebar, near the front brake lever.

The rear brake fluid reservoir is located under the right fairing.

Do not use the vehicle if the braking system leaks fluid.

**COOLANT****DANGER**

Coolant is toxic when ingested and is an irritant, contact with eyes or skin may cause irritation.

In the event of contact with eyes, rinse repeatedly with abundant water and seek medical advice. In the event of ingestion, induce vomiting, rinse mouth and throat with abundant water and seek medical advice immediately.

**DO NOT RELEASE INTO THE ENVIRONMENT.**

**KEEP AWAY FROM CHILDREN.**

**DANGER**

Take care not to spill coolant onto hot engine parts. It may ignite and produce invisible flames. Wear latex gloves when servicing.

Do not ride when coolant is below the minimum level.

Check coolant level before each ride and every 1500 km (932 mi), see [2.10.1](#). Change coolant every two years, see [5.2.1](#).

Coolant mixture is a 50% solution of water and anti-freeze. This is the ideal solution for most operating temperatures and provides good corrosion protection.

This solution is also suited to the warm season, as it is less prone to evaporative loss and will reduce the need for top-ups.

In addition, less water evaporation means fewer minerals salts depositing in the radiator, which helps preserve the efficiency of the cooling system.

When temperature drops below zero degrees centigrade, check the cooling system frequently and add more anti-freeze (up to 60% maximum) to the solution.

Use distilled water in the coolant mixture. Tap water will damage the engine.

(Recommended) engine anti-freeze, see [1.8.1](#).

Refer to the chart given below and add water with the quantity of anti-freeze to obtain a solution with the desired freezing point:

Freezing point °C	Coolant % of volume
-20°	35
-30°	45
-40°	55

**NOTE** Coolants have different specifications. The protection degree is written on the label.



**WARNING**

Use nitrate-free coolant only, with a protection until at least -35°C.

**DRIVE CHAIN**

Check drive chain operation, slack and lubrication at regular intervals, see [2.21.1](#).

The vehicle is equipped with an endless chain with a joint link.



**WARNING**

If too slack, the chain can come off the front or rear sprockets thus leading to serious accidents and damage to the vehicle, with consequent serious personal injury or death.

Do not use the vehicle if the chain tension has not been correctly adjusted.

To check chain, take it with your hand where it turns on the rear sprocket and pull it as to separate it from the crown itself.

If you can move the chain apart of the front sprocket for more than 3 mm (0.125 in), change chain, crown and pinion.



**DANGER**

If not properly maintained, chain can early wear out and lead to the damage of both crown and pinion.

Perform chain maintenance operations more frequently if the vehicle is used on rainy or dusty areas.

**TYRES**



**WARNING**

If tyres are excessively inflated, the vehicle will be hard and uneasy to ride, thus making you feel not at your ease.

In addition the roadworthiness, mainly on wet surfaces and during cornering, will be impaired.

Flat tyres (insufficient pressure) can slip on the rim and make you lose the control of the vehicle.

In this case too, both vehicle roadworthiness, maneuverability and brake efficiency will be impaired.

Tyres changing, repair, maintenance and balancing must be carried out by specialized technicians using suitable equipment.

When new, tyres can have a thin slippery protective coating. Drive carefully for the first kilometers (miles). Never use rubber treating substances on tyres.

In particular, avoid contact with fluid fuels, leading to a rapid wear.

In case of contact with oil or fuel, do not clean but change tyres.



**DANGER**

Some of the factory-assembled tyres of this vehicle are provided with wear indicators.

There are several kinds of wear indicators.

For more information on how to check the wear, contact your Dealer.

Visually check if the tyres are worn and in this case have them changed.

If a tyre deflates while driving, stop immediately.

Avoid hard brakings or moves and do not close throttles too abruptly.

Slowly close throttle grip, move to the edge of the road and make use of the engine brake to slow down until coming to a halt.

Failure to comply with these recommendations can lead to serious accidents and consequent personal injuries or death.

Do not install tyres with air tube on rims for tubeless tyres and viceversa.

## 1.4. RUNNING-IN

### 1.4.1. RUNNING-IN RECOMMENDATIONS

The running-in of the engine is essential to ensure its duration and correct functioning.

If possible, drive on hilly roads and/or roads with many bends, so that the engine, the suspensions and the brakes undergo a more effective running-in.

During running-in, change speed.

In this way the components are first "loaded" and then "relieved" and the engine parts can thus cool down.

Even if it is important to stress the engine components during running-in, take care not to exceed.



#### WARNING

**Only after the first 1500 km (932 mi) of running-in you can expect the best performance levels from the vehicle.**

Keep to the following indications:

- Do not open the throttle completely if the speed is low, both during and after the running-in.
- During the first 100 km (62 mi) pull the brakes with caution, avoiding sharp and prolonged brakings. This ensures a correct bedding-in of the pads on the brake disc.
- During the first 800 km (497 mi) never exceed 5000 rpm (see table).



#### WARNING

**After the first 1000 km (621 mi), Dealer carry out the checks indicated in the column "After running-in", see [2.1.2](#), in order to avoid hurting yourself or other people and/or damaging the vehicle.**

- Between the first 800 km (497 mi) and 1600 km (994 mi) drive more briskly, change speed and use the maximum acceleration only for a few seconds, in order to ensure better coupling of the components; never exceed 9000 rpm (see table).
- After the first 1600 km (994 mi) you can expect better performance from the engine, however, without exceeding the maximum allowed [11000 rpm].

Engine maximum rpm recommended	
Mileage km (mi)	rpm
0÷800 (497)	6000
800÷1600 (497÷994)	9000
over 1600 (994)	11000

## 1.5. VEHICLE IDENTIFICATION DATA

### 1.5.1. SERIAL NUMBERS LOCATION

The vehicle serial numbers are used for its homologation.

**NOTE** Do not alter the identification numbers if you do not want to incur severe penal and administrative sanctions. In particular, the alteration of the frame number results in the immediate invalidity of the guarantee.

#### FRAME NUMBER

The frame number is stamped on the right side of the steering column.



#### ENGINE NUMBER

The engine number is stamped on the rear part of the engine, near the shock absorber.



## 1.6. USING TOOLS AND SPARE PARTS

### 1.6.1. SPARE PARTS

Should some parts be replaced, use aprilia Original Spare Parts only.  
aprilia high-quality Original Spare Parts have been expressly designed and manufactured for aprilia vehicles.

**WARNING**

The use of aprilia non original spare parts can impair the vehicle performance or cause serious damage to the vehicle itself.

1.6.2. USE OF PRODUCTS

For all maintenance operations, use the product listed below only.

The listed materials have been tested for many years and are suitable for all the applications specified by the manufacturer.

**NOTE** Consumer goods, article number, are available upon request (see table) .

PRODUCT SPECIFICATIONS

Description	Use
Molykote 111 / N. ROTAX 897 161 	<ul style="list-style-type: none"> <li>- Clearance between the two oil seals of the coolant pump.</li> <li>- Starting driving gears.</li> </ul>
LOCTITE ANTI-SEIZE 76710 N. ROTAX 297 431 	<ul style="list-style-type: none"> <li>- Crankshaft ball-bearing housings.</li> <li>- Countershaft ball-bearing housings.</li> <li>- Gearshafts ball-bearing housings.</li> </ul>
Lubricate	<ul style="list-style-type: none"> <li>- All ball bearings, sintered discs, gears, cylinder walls, if not otherwise specified.</li> </ul>
Grease	<ul style="list-style-type: none"> <li>- Oil seals lips, if not otherwise specified.</li> </ul>
Gearbox oil	<ul style="list-style-type: none"> <li>- Engine oil SAE 30, 0,6 l</li> </ul>
Engine oil	<ul style="list-style-type: none"> <li>- Premium 2-stroke engine oil</li> </ul>
LOCTITE 221 / N. ROTAX 899 785 	<ul style="list-style-type: none"> <li>- Countershaft bearing locking washer retaining oval-headed screw. Starter pedal gear washer retaining oval-headed screw (RX only).</li> <li>- Coupling gear stopper retaining socket head screw.</li> <li>- Electric starting device retaining socket head screws.</li> <li>- Oil pump retaining socket head screws.</li> <li>- All "Taptite" screws for casing and clutch cover reassembly.</li> </ul>
LOCTITE 648 / N. ROTAX 899 788 	<ul style="list-style-type: none"> <li>- Flywheel-to-crankshaft fixing hexagon nut.</li> <li>- Water tube into casing.</li> <li>- Electric starting device hole cover into casing (RX only)</li> </ul>
Silastic 732 RTV / N. ROTAX 297386 	<ul style="list-style-type: none"> <li>- Neutral indicator contact screw.</li> <li>- Ignition cable seal.</li> </ul>

### 1.6.3. SPECIAL TOOLS

Special and suitable tools are required to carry out the disassembly and reassembly operations as well as for a correct setting up.

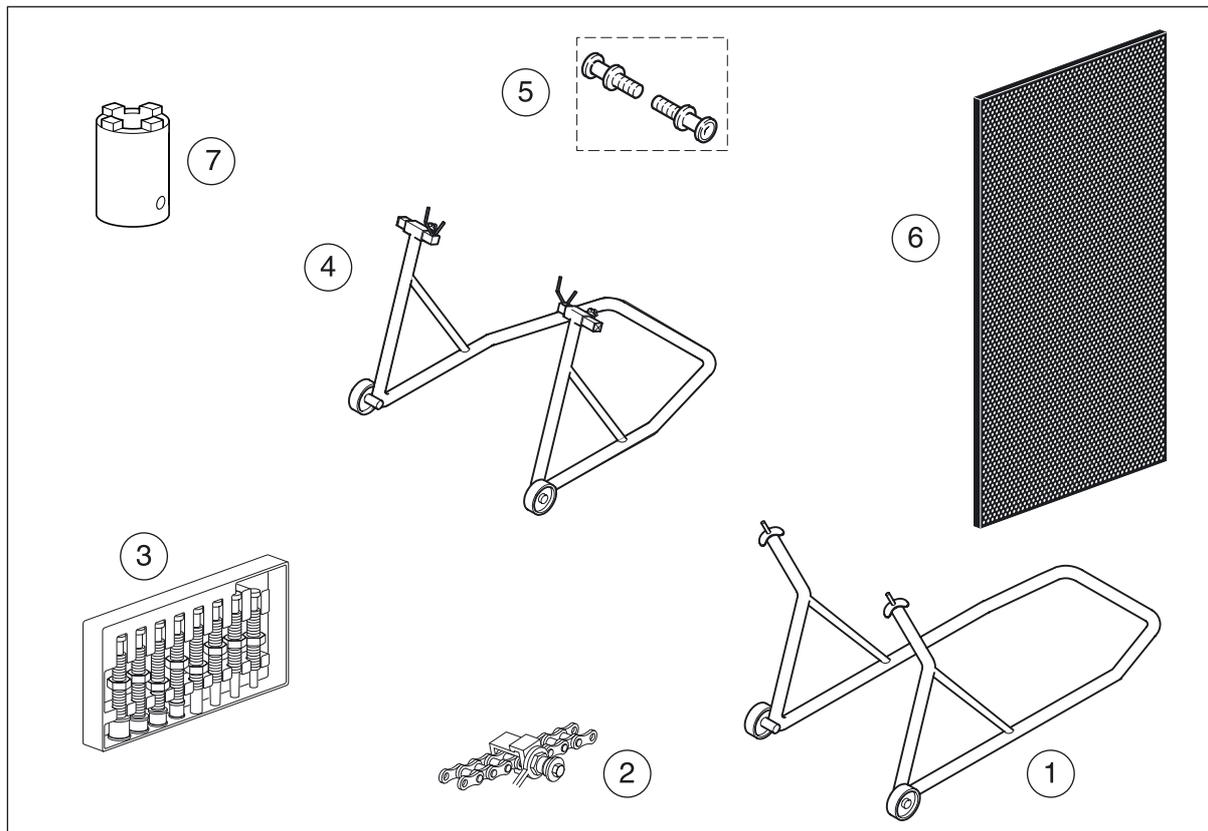
The use of special tools avoids any possible damage arising from the use of non-suitable tools and/or the implementation of improvised procedures. The special tools, designed for this vehicle, are listed hereinafter.

Should you require some special general tools, please refer to the special tools manual.



#### WARNING

Before using any special tool, please refer to the documents coming with the tool itself.



Key:

Position	Tool name and function	Part No.
1	Front service stand	8146486
2	Tool for chain assembly/disassembly	8140192
3	Ø10 mm to Ø 30 mm bearing pulling kit	8140180
4	Rear service stand	8705021
5	Rear service stand surface mounts	8140204
6	Tool-holding panel	8140199
7	Swingarm pivot shaft ring nut wrench	8101945

**1.6.4. GENERAL TIGHTENING TORQUE SETTINGS**

The table shows the standard tightening torque settings for ISO thread screws and bolts.

Screw or bolt thread	Wrench	Tightening torque	
		Nm	kgm
M 6	10	6	0.6
M 8	12	15	1.5
M 10	14	30	3.0
M 12	17	55	5.5
M 14	19	85	8.5
M 16	22	130	13.0

For special couplings on this vehicle, refer to  2.3.4.

If not otherwise specified, the tightening torque settings refer to clean, dry and ambient temperature threads.

**NOTE** *In order to avoid any possible deformation and/or wrong coupling, please tighten screws and bolts as follows:*

- Snug all fasteners by hand.
- Apply half of the recommended tightening torque value and tighten the opposite parts: (A) and (B); (C) and (D).
- Repeat the above operation by tightening to the specified torque value.

**NOTE** *The pressure on the fastening parts will be thus evenly distributed on the coupling surface.*

## 1.6.5. TECHNICAL DATA

DIMENSIONS	
Max. length	1950 mm
Max. length (with the optional rear mudguard extension).	2005 mm
Max. width	720 mm
Max. height (front part of the fairing included)	1135 mm
Seat height	805 mm
Wheel base	1345 mm
Min. ground clearance	163 mm
Weight ready for starting (fuel and fluids included)	139 kg
Seats	2
Vehicle max. load (rider + passenger + luggage)	180 kg
ENGINE	
Type	Single-cylinder, two-stroke, with reed intake system. Separate lubrication with automatic mixer at variable strength (1.0 – 3.0 %).
Number of cylinders	1
Total displacement	124.82 cu. cm
Bore/stroke	54 mm /54.5 mm
Compression ratio	12.5 ± 0.5: 1
“Squish”	1.5 mm
Engine idling rpm	1250 ± 100 rpm
Max. rotation speed rpm	11000 ± 100 rpm
Ignition	CDI with electronic timing
Starting	electric
Ignition advance	12° ± 2° at 2000 rpm
Clutch	Multidisc in oil bath, with manual control on the left side of the handlebar
Gearbox	Mechanical, 6 gears with foot control on the left side of the engine
Gearbox oil	600 cu. cm
Gearbox oil (FP)	600 cu. cm
Gearbox lubrication	Splash lubrication
Lubrication system	Separate lubrication with automatic mixer at variable strength (1.0 – 1.3%)
Mixer oil (with reserve)	1.4 l
Mixer oil reserve	0.35 l
Air cleaner	Sponge-type
Cooling system	Liquid-type
Coolant	0.8 l (50% water + 50% coolant with ethylene glycol)
Coolant pump capacity (with open thermostat)	20 l/min. at 10000 rpm
Thermostat starts opening at:	70°
Dry engine weight	24 kg

TRANSMISSION					
GEAR RATIOS	Ratio	Primary	Secondary	Final ratio	Total ratio
	1 <sup>st</sup>	19/63 = 1: 3.315	10/30 = 1: 3.000	17/40 = 1: 2.353	1: 23.406
	2 <sup>nd</sup>		14/29 = 1: 2.071		1: 16.161
	3 <sup>rd</sup>		17/27 = 1: 1.588		1: 12.391
	4 <sup>th</sup>		19/25 = 1: 1.316		1: 10.266
	5 <sup>th</sup>		21/24 = 1: 1.143		1: 8.916
	6 <sup>th</sup>		22/23 = 1: 1.045		1: 8.156
Drive chain	With joint link				

FUEL SUPPLY SYSTEM	
Type	Carburettor
FUEL SUPPLY	
Fuel	Premium-grade petrol according to DIN 51 600 (4 Stars - UK-), min. O.N. 98 (N.O.R.M.) and 88 (N.O.M.M.)
Fuel ( AUS)	Premium-grade unleaded petrol according to DIN 51 607, min. O.N. 95 (N.O.R.M.) and 85 (N.O.M.M.)
Fuel (reserve included)	13 l
Fuel reserve	3.5 l (mechanical reserve)
FRAME	
Type	Stamped-plate, twin beam, with cast parts frame
Steering inclination angle	25° 30'
Trail	102 mm
SUSPENSIONS	
Front	telescopic fork with hydraulic operation
Fork oil	430 cu. cm (per leg)
Stroke	120 mm
Rear	Adjustable hydraulic monoshock
Wheel travel	44.5 mm
BRAKES	
Front	hydraulic disc brake - Ø 320 mm
Rear	hydraulic disc brake - Ø 220 mm
WHEEL RIMS	
Type	in light alloy
Front	3.00 x 17"
Rear	4.00 x 17"

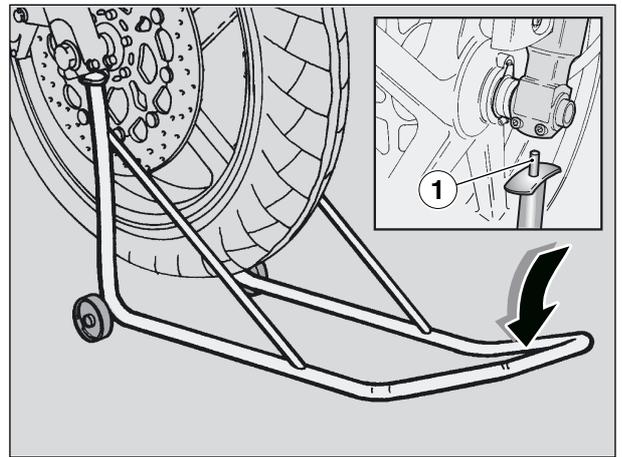
TYRES			
Wheel	Size	Pressure kPa (bar)	
		Rider only	Rider and passenger
Front (standard)	100/80 17" 52S 110/70 R 17" 54T 100/80 ZR 17"	180 (1.8)	180 ± 10 (1.8±0.1)
Posteriore (di serie)	130/70 17" 62S 140/60 ZR 17" 150/60 ZR 17"	200 (2.0)	230 ± 10 (2.3±0.1)

SPARK PLUGS	
Standard	NGK R BR10EG
Standard (FP)	NGK BR8EG
Spark plug gap	0.7 – 0.8 mm
ELECTRIC SYSTEM	
Battery	12 V - 9 Ah
Generator	12 V - 180 W
BULBS	
Low beam (halogen)	12 V - 55 W H1
High beam (halogen)	12 V - 55 W H3
Front parking light	12 V - 5 W
Direction indicators	12 V - 10 W
Rear parking lights/Number plate light/ Stoplight	12 V - 5 / 21 W
Revolution counter lighting	12 V - 2 W
Speedometer lighting	12 V - 2 W
Multifunction display	12 V - 3 W
WARNING LIGHTS	
Neutral	12 V - 2 W
Direction indicators	12 V - 2 W
Mixer oil reserve	LED
High beam	12 V - 2 W
Stand down	12 V - 2 W

## 1.7. STANDS

### 1.7.1. POSITIONING THE VEHICLE ON THE FRONT SERVICE STAND (OPT)

- Position the vehicle on the appropriate rear service stand (OPT), see [1.7.2.](#)
- Insert the two ends of the stand (1) in the two holes positioned on the lower ends of the front fork.
- Rest one foot on the front part of the stand.
- Push the stand downwards until it reaches the end of its stroke.

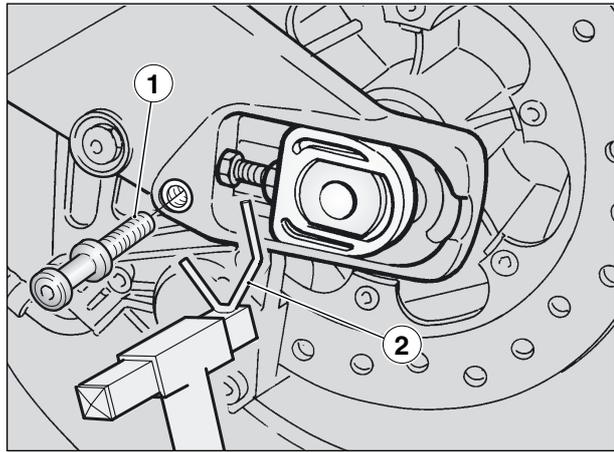


**1.7.2. POSITIONING THE VEHICLE ON THE REAR SERVICE STAND (OPT)**

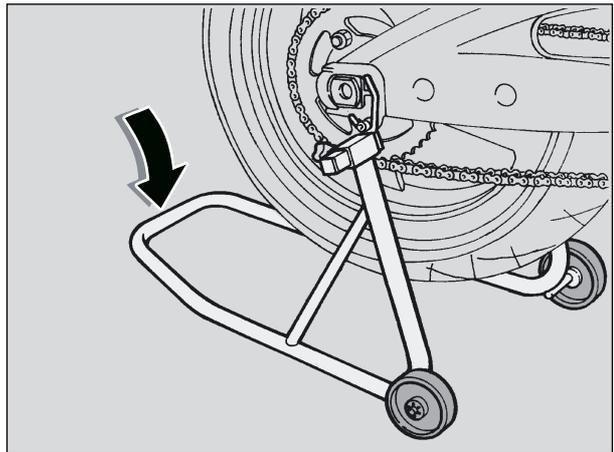
- Screw and tighten the pin (1) into its proper location on the rear swingarm.

**NOTE** Have someone help you keep the vehicle in vertical position with the two wheels on the ground.

- At the same time introduce the two seats on the stand (2) into the two pins (1) on the vehicle.



- Rest one foot on the rear part of the stand.
- Push the stand downwards until it reaches the end of its stroke.



## 1.8. PRODUCTS

## 1.8.1. LUBRICANT CHART

LUBRICANT	PRODUCT
Gear oil	RECOMMENDED:  F.C., SAE 75W - 90 or  Agip GEAR SYNTH, SAE 75W – 90. As an alternative to the recommended oils, it is possible to use select oils having properties in compliance with or even above A.P.I. GL-4 specifications.
Mixer oil	RECOMMENDED:  MAX 2T COMPETITION or  Agip SPEED 2T. As an alternative to the recommended oil, use select oils having properties in compliance with or even above ISO-L-ETC ++,A.P.I. TC ++ specifications.
Fork oil	RECOMMENDED: fork oil  F.A. 5W or  F.A. 20W, or  Agip FORK 5W or  Agip FORK 20W. Should you wish to reach an average behaviour between those offered by  F.A. 5W and by  F.A. 20W or by  Agip FORK 5W and  Agip FORK 20W., mix the products as follows: SAE 10W =  F.A. 5W 67% of the volume, +  F.A. 20W 33% of the volume  Agip FORK 5W 67% del volume, +  Agip FORK 20W 33% del volume. SAE 15W =  F.A. 5W 33% of the volume, +  F.A. 20W 67% of the volume  Agip FORK 5W 33% del volume, +  Agip FORK 20W 67% del volume.
Bearings and other lubrication points	RECOMMENDED:  AUTOGREASE MP or  Agip GREASE 30. As an alternative to the recommended product, use select oil for rolling bearings, useful temperature range -30°C...+140°C, dripping point 150°C...230°C, highly anticorrosive, water and oxidization resistant.
Battery terminals	Neutral grease or vaseline .
Chain spray grease.	RECOMMENDED:  CHAIN SPRAY or  Agip CHAIN LUBE.
Brake fluid	RECOMMENDED:  F.F., DOT 5 (DOT 4 compatible) or  Agip BRAKE 5.1, DOT 5 (DOT 4 compatible). DANGER Use only new brake fluid.
Engine coolant	RECOMMENDED:  ECOBLU -40°C or  Agip COOL. DANGER Use non-corrosive, nitrate-free coolant, with a protection of at least -35°C.

## 1.8.2. DECALS INSTRUCTIONS

Should some frame parts be removed:

**NOTE**

Plastic and painted parts shall be handled with care. Do not score or damage them.

Operate with care.

Do not damage keys and/or keyways.

When sticking decals, carefully follow the instructions listed herebelow.

Recommended tools:

- Medium-strength spatule (1);

**NOTE** Soft spatules, such as those used on windshield wipers, do not usually sufficiently remove the water under the decal.

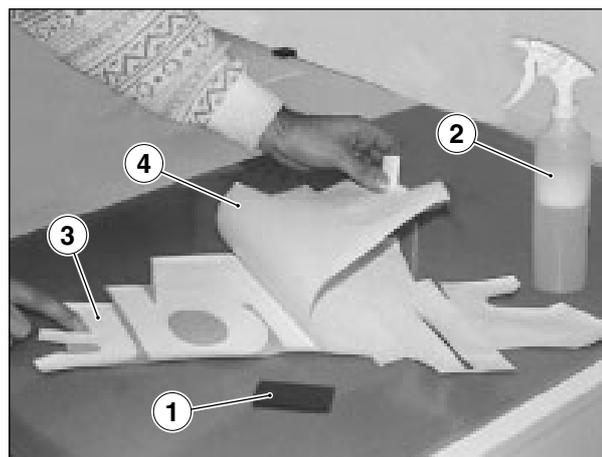
- sponge or sprayer (2) with water.

**NOTE** Add some detergent (1-3%) to water and then shake it to produce foam bubbles.

To apply decals, proceed as follows:

- Position the decal (3) in upside-down position on the work bench.
- Keep the decal flat and pressed on the work bench and remove the protective film (4) completely.

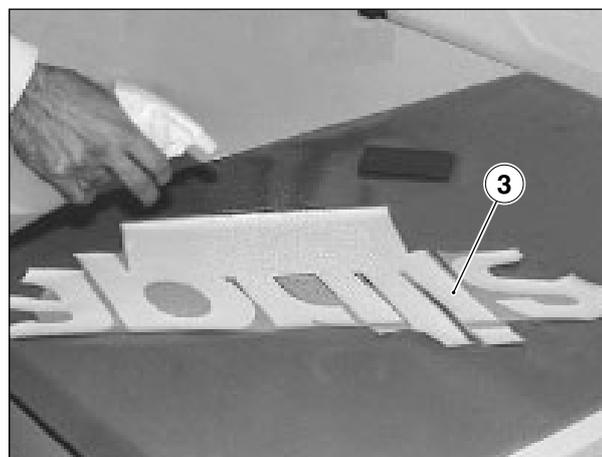
**NOTE** The use of a sprayer (2) is recommended.



In case you are using a sponge, apply it on the surface without exerting any pressure in order not to damage the adhesive.

- Wet the adhesive surface with suds.
- Apply the decal (3) on the surface you wish to decorate and position it correctly.

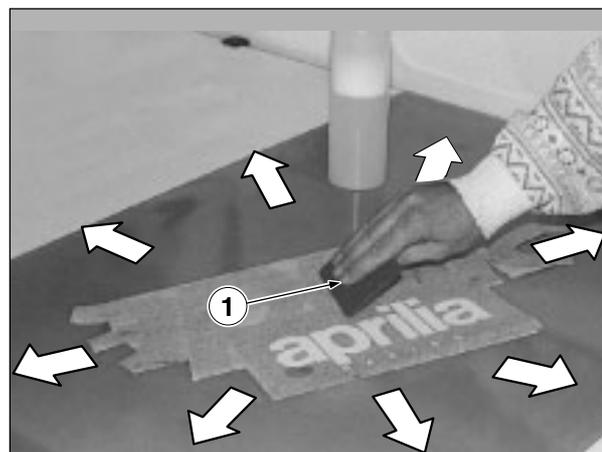
**NOTE** Press the spatule with constant movements, working from the center towards the edge of the decal.



- Apply a moderate pressure on the decal surface with the spatule (1) until all the excess soap and water under the decal itself have been completely removed.

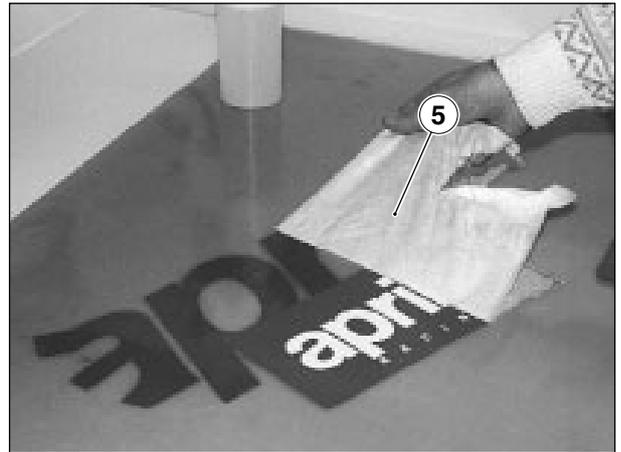
**NOTE** Do not lift the decal corners and/or edges.

- Using a cloth and working from inwards to outwards, dry the decal.
- Use again the spatule. Press as much as possible. Always work starting from the center to the outside and take special care to the corners and edges in order to ensure an even adhesion on the whole surface.



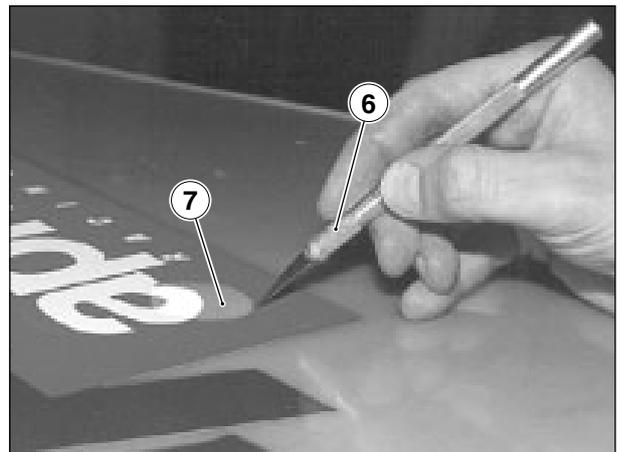
**NOTE** If present, remove the application tape (5) 20 to 30 minutes after applying the decal.

- Remove the application tape (5) from the decal surface.
- To ensure a good adhesion, use the spatule again by taking special care to the corners and edges.



**NOTE** When using the wet method, the decal final adhesion level will be reached around 48 hours after the application.

- After having removed the application tape, make sure that no blisters are present on the surface.
- Should some blisters be present, proceed as follows:
- Using a pin or a cutter (6) cut the blister (7).
  - Use the spatule (1) starting from the side opposite to the cut and press the blister to make the air come out.



The application tape is used to make the makes and letters application easier, namely to position them correctly on the surface you wish to decorate and to reinforce the adhesive during application.

## GENERAL INFORMATION

Product: 1993-2002 Aprilia RS125 Motorcycle Service Repair Workshop Manual

RS 125

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